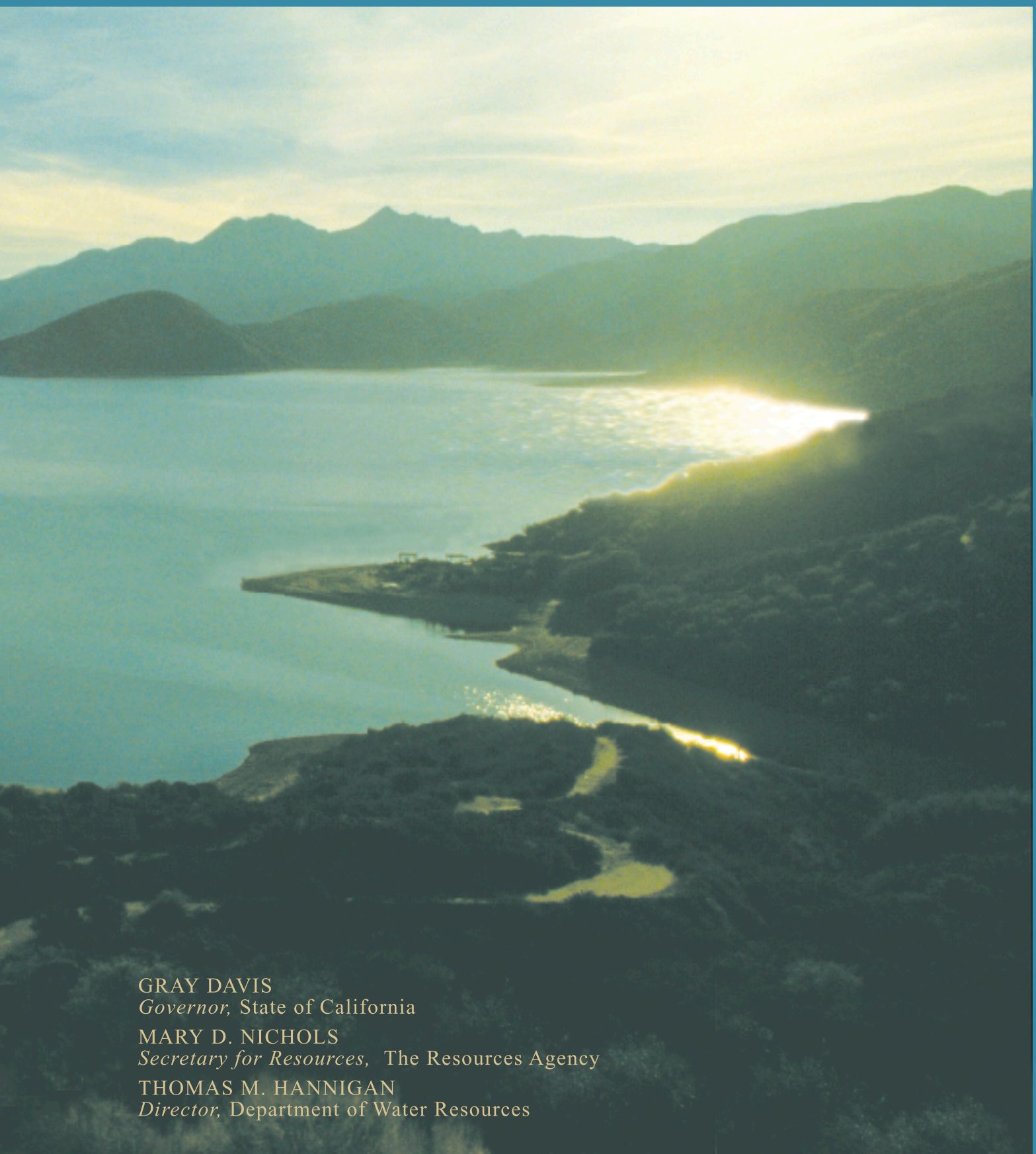
BULLETIN 132-99 March 2001

MANAGEMENT OF THE CALIFORNIA STATE WATER PROJECT



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Management of the California State Water Project

Covers Activities during Calendar Year 1998

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Gray Davis, Governor
State of California

Mary D. Nichols, Secretary for Resources
The Resources Agency

Thomas M. Hannigan, Director
Department of Water Resources

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Foreword

Bulletin 132-99, *Management of the California State Water Project,* continues the Bulletin 132 annual series begun in 1963. Bulletin 132-99 updates water supply planning, construction, financing, management, and operation activities of the State Water Project. Appendix B contains data and computations used to determine the State Water Project contractors' Statement of Charges for 2000. Appendix B was previously published as an individual document.

The Bulletin discusses significant events and issues that affect SWP management and operations. The Bulletin covers the period from January 1, 1998, to December 31, 1998.

Bulletin 132-99 also discusses water supply and delivery; plans for the East Branch Extension; deregulation of the electric utilities industry; financial analysis of the SWP; and Delta resources and environmental issues, including the CALFED Bay-Delta Program.

Thomas M. Hannigan
Director

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Abbreviations and Acronyms

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A

AB Assembly Bill

ACWD Alameda County Water District *

ACFCWCD Alameda County Flood Control and Water Conservation District, Zone 7 *

ADA Americans with Disabilities Act

AFRP Anadromous Fish Restoration Plan

AVEKWA Antelope Valley-East Kern Water Agency *

B

BBID Byron-Bethany Irrigation District

BDAC Bay-Delta Advisory Council

BMWD Berrenda Mesa Water District

C

CALFED State (CAL) and federal (FED) agencies participating in the Bay-Delta Accord

CCSG Cantua Creek Stream Group

CCWA Central Coast Water Authority or Contra Costa Water Agency

CCWD Contra Costa Water District

CD Conservation District

CEA Capacity Exchange Agreement

CEQA California Environmental Quality Act

CESA California Endangered Species Act

cfs cubic feet per second

CIMIS California irrigation management information system

City of Yuba City *

CLAWA Crestline-Lake Arrowhead Water Agency *

CLWA Castaic Lake Water Agency *

COA Coordinated Operation Agreement

County of Butte *

County of Kings *

Corps U.S. Army Corps of Engineers

CVC Cross Valley Canal

CVHJV Central Valley Habitat Joint Venture

CVP Central Valley Project

CVPIA Central Valley Project Improvement Act

CVRWQCB Central Valley Regional Water Quality Control Board

CVWD Coachella Valley Water District *

D

D-1485 State Water Resources Control Board Water Right Decision 1485

DCVCWLNG Direct Cross Valley Canal Wheeling

DEIR draft environmental impact report

DFG California Department of Fish and Game

DLRD Delta Lands Reclamation District

DOE Department of Energy or Division of Engineering

DOI Department of the Interior or Delta Outflow Index

DRWD Dudley Ridge Water District *

DSM2 Delta Simulation Model 2

DSOD Division of Safety of Dams

DWA Desert Water Agency *

DWR California Department of Water Resources

E

EA/IS Environmental Assessment/Initial Study

ECAT Environmental Coordination Advisory Team

ECCID East Contra Costa Irrigation District

EIR environmental impact report

EIS environmental impact statement

EPA U.S. Environmental Protection Agency

ESO Environmental Services Office

EWSID Empire West Side Irrigation District *

F

FERC Federal Energy Regulatory Commission

FLIMS Field and Laboratory Information Management System

H

HMP Hazard Mitigation Plan

I

IEP Interagency Ecological Program

IFDM Integrated on-Farm Drainage Management

INDP Interim North Delta Plan

ISDP Interim South Delta Program

ISO California Independent System Operator Corporation

K

KCWA Kern County Water Agency *

KWB Kern Water Bank

kWh kilowatt hour

L

LADWP Los Angeles Department of Water and Power

LCID Littlerock Creek Irrigation District *

LHWD Lost Hills Water District

LTRID Lower Tule River Irrigation District

M

MCL maximum contaminant level

mg/L milligrams per liter

MIDS Morrow Island Distribution System

MOP Musco Olive Products

MTBE methyl tertiary butyl ether

MW megawatt

MWA Mojave Water Agency *

MWD Metropolitan Water District of Southern California *

MWQI Municipal Water Quality Investigations

N

NCFCWCD Napa County Flood Control and Water Conservation District *

NDOI Net Delta Outflow Index

NEPA National Environmental Policy Act

NMFS National Marine Fisheries Service

NPC Nevada Power Company

NPDES national pollutant discharge elimination system

O

OFWD Oak Flat Water District *

O&M Division of Operations and Maintenance

OM&P Operations, maintenance, and power

OMP&R Operations, maintenance, power, and replacement

OM&R Operations, maintenance, and replacement

P

PCFCWCD Plumas County Flood Control and Water Conservation District *

PCL Planning and Conservation League

PG&E Pacific Gas and Electric Company

pH [p(otential) of H(ydrogen]

PID Pixley Irrigation District

ppt parts per thousand

PSA Public Service Announcement

PWD Palmdale Water District *

PX California Power Exchange Corporation

Q

QA/QC Quality Assurance/Quality Control

R

RD reclamation district

S

SB Senate Bill

SBCFCWCD Santa Barbara County Flood Control and Water Conservation District *

SBVMWD San Bernardino Valley Municipal Water District *

SCE Southern California Edison

SCVWD Santa Clara Valley Water District *

SCWA Solano County Water Agency *

SDTBP South Delta Temporary Barriers Project

SDWA South Delta Water Agency

SEW Suisun Ecological Workgroup

SGPWA San Gorgonio Pass Water Agency *

SGVMWD San Gabriel Valley Municipal Water District *

SJVDIP San Joaquin Valley Drainage Implementation Program

SLFD San Luis Field Division

SLOCFCWCD San Luis Obispo County Flood Control and Water Conservation District *

SMPA Suisun Marsh Preservation Agreement

SMSCG Suisun Marsh Salinity Control Gates

SRB State Reclamation Board

SRCD Suisun Resource Conservation District

SVUR Sacramento Valley Unimpaired Runoff

SWP State Water Project

SWRCB State Water Resources Control Board

SWSD Semitropic Water Storage District

T

TLBWSD Tulare Lake Basin Water Storage District *

U

UCLA University of California at Los Angeles

USBR U.S. Bureau of Reclamation

USFWS U.S. Fish and Wildlife Service

USGS U.S. Geological Survey

V

VAMP Vernalis Adaptive Management Program

VCFCD Ventura County Flood Control District *

W

WAM Water Awareness Month

WQA water quality assessment

WQCP water quality control plan

WR 95-6 SWRCB Order Water Right 95-6

WWD Westlands Water District

WSCC Western Systems Coordinating Council

Y

YCWA Yuba County Water Agency

*** State Water Contractor**

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Executive Summary

Waterway and wildlife habitat,
Suisun Marsh in the Delta

The Bulletin 132 series began in 1963 and reported the first deliveries of water by the new State Water Project, which was still under construction. Bulletin 132-99, *Management of the California State Water Project*, continues the series with the thirty-sixth edition of the Bulletin. It reports planning, construction, financing, managing, and operating activities of the SWP in 1998. The SWP is operated and maintained by the California Department of Water Resources.

Introduction

The SWP is one of the largest water and power systems in the world. It conveys an average annual 2.4 million acre-feet of water through its 17 pumping plants, 8 hydroelectric powerplants, including 3 pumping-generating plants, 28 dams and reservoirs, and more than 660 miles of aqueducts and pipelines.

In 1998, the SWP delivered 2,755,335 acre-feet of water to 27 of its 29 long-term water contractors and 16 other agencies. The project provides water for approximately 20 million people throughout the state, irrigation for 600,000 acres of farm land, and environmental benefits to wildlife refuges as well as environmental mitigation programs**.**

Deliveries in winter and early spring 1998 were reduced from recent historical averages because of emergency repairs to the Aqueduct between the Delta and San Luis Reservoir.

The SWP facilitated the transfer or exchange of 147,569 acre-feet of entitlement water among SWP long-term contractors and non-SWP agencies, delivered 62,533 acre-feet of CVP water conveyed through SWP facilities, and provided 903,613 acre-feet to water right holders within the SWP service area.

The Department continued to plan and design the East Branch Extension for San Bernardino and Riverside counties in 1998.

Following deregulation of the California electric industry, the Department became its own energy scheduling coordinator with the California Independent Systems Operator and began scheduling purchases and sales of energy to operate the SWP in 1998.

The project continued to pay bondholders as scheduled and remained financially viable. The 29 long-term water contractors continued to repay project construction bonds and operating expenses. In 1998, the SWP handled approximately $600 million in income and $600 million in expenses, with general fund contributions limited to recreation facilities.

1998 Precipitation and Water Storage

The water stored and delivered by the SWP conservation and transportation facilities originates from rainfall and snowmelt in Northern and Central California watersheds, where most of the State's precipitation occurs.

The Department monitors and records annual precipitation and runoff during water years, which run from September 30 to October 1.

Precipitation

Water year 1997-98 was the fourth wet year in a row for Northern California. A strong El Niño in the eastern tropical Pacific Ocean produced above-average precipitation in California, especially the central and southern portions of the State. The water year was marked by big snowpacks and abundant snowmelt runoff.

In contrast to water year 1996-97, coastal watersheds and smaller basins generated flooding in water year 1997-98. The upper Sacramento Valley was also wet; flooding was comparable to the larger floods of record, despite effective flood control operations at Shasta Reservoir. Flood runoff from major Sierra rivers, including the Feather River, was not unusually large.

October started the water year with near-normal precipitation while November was above average, but not unusually wet. December was below average, even with some intense local storms in the South Coast region in early December. Both January and February were extremely wet—February precipitation was nearly three times normal. However, February storms were relatively cool and contributed to a heavy snowpack in the mountains. Winter 1998 had the heaviest snowpack since 1983, another strong El Niño year.

March and April had above-average precipitation, but not nearly as high as February. May was cool and wet. June started out cool and wet, but after the middle of June precipitation diminished. September saw near-normal showers in the mountains.

Runoff

Runoff in the Central Valley rivers in water year 1997-98 was about 20 percent more than in 1996-97. Total runoff for the eight major rivers of the Sacramento-San Joaquin River system was the sixth wettest of record.

Storage

Total storage in major SWP reservoirs was 4.39 million acre-feet on September 30, 1998, the end of water year 1997-98. Total storage in major SWP reservoirs at the end of calendar year 1998 was about 4.4 million acre-feet.

1998 Water Supplies, Contracts, and Deliveries

Water Deliveries

In March 1998, the Department announced projected deliveries of 3.19 million acre-feet of entitlement water in 1998, 100 percent of the amount requested by the 29 long-term water contractors. Because of heavy snowpack and runoff in 1998, contractors did not require the entire 3.19 million acre feet of water they originally requested. The SWP met all contractors' demands for entitlement water.

Entitlement Water. The SWP delivered 1,745,807 acre-feet of entitlement water to 27 of its 29 long-term water contractors.

Nonproject Water. The contractors also received 99,252 acre-feet of nonproject water, for a total of 1,845,059 acre-feet.

A total of 31,100 acre-feet of nonproject water was exchanged for project water under letter agreements with two long-term contractors.

The SWP also delivered 2,108 acre-feet of recreation/fish and wildlife water and 1,007,420 acre-feet of nonentitlement water to satisfy water rights settlement holders and agreements made with SWP contractors and other agencies, including the U.S. Bureau of Reclamation.

Water rights water is transported through SWP facilities to long-term SWP contractors and other agencies according to terms of various local water rights agreements. Water may pass through SWP transportation facilities or a portion may be stored in SWP reservoirs for release at a later time.

Two South Bay Aqueduct contractors, who hold water rights to runoff from the Lake Del Valle watershed, received 30,358 acre-feet of local water; 517 acre-feet of local runoff were delivered to a contractor in Southern California under local water rights; and nine nonproject agencies in the Feather River area received 872,738 acre-feet.

The Feather River water rights settlement contractors are agencies that held water rights for Feather River water before the SWP was built. The Department negotiated settlements with these water rights holders and agreed to deliver a regulated water supply from Oroville in exchange for the agencies' agreement concerning their Feather River water rights.

Specific information regarding delivery amounts and locations can be found in Chapter 9.

Table ES-1 shows SWP water deliveries by category for the years 1962-98.

Aqueduct Repairs

Deliveries between the Delta and San Luis Reservoir were reduced in winter and early spring 1998, as major emergency repairs took place at mileposts 54.95 and 52.5 in the Aqueduct.

Flows in the Aqueduct between the Delta and San Luis Reservoir were suspended in mid-February after seepage intensified at milepost 54.95. This is the same location where up to 2,000 gallons per minute leaked through the lining in August 1997. Two large cofferdams were built of rock fill and water was removed from a 2,000-foot segment of the canal.

To save the fish in the dewatered canal reach, a crew from the California Conservation Corps waded through the shallow water, netting large catfish and striped bass. The rescued fish were released in a nearby part of the Aqueduct.

The Aqueduct's broken concrete panels were replaced and a new liner was placed over the site of the leak. The permanent repair of milepost 54.95 cost approximately $3.1 million.

A slipout occurred in March 1998 at milepost 52.5. About 50,000 cubic yards of material were removed from the canal and a series of steel tiebacks installed to stabilize a slope above the west side of the Aqueduct. Since the canal could not be emptied for operational reasons, the repair work was performed in the water. Repair of milepost 52.5, which took 2 months, cost approximately $1.3 million.

Nonproject Transfers

In 1998, the Department conveyed 62,533 acre-feet of CVP water through SWP facilities for USBR.

Monterey Amendments

The Department did not execute any Monterey Amendments during 1998. Plumas County Flood Control and Water Conservation District, Empire West Side Irrigation District, and Ventura County Flood Control District remain the only long-term water contractors who have not signed the Monterey Agreement.

Project Development

East Branch Extension

The Department stepped up its efforts to provide water for San Bernardino and Riverside counties through the East Branch Extension. The extension will bring SWP water to Yucaipa, Calimesa, Beaumont, Banning, and other nearby communities, improve groundwater supplies in the Beaumont Storage Basin, and add flexibility to wheel local supplies within the San Bernardino Valley Municipal Water District service area. Figure ES-1 presents a map of the East Branch Extension, Phase I area.

The project, in the planning stages throughout the 1990s, finally cleared major legal, financial, and environmental barriers and was ready for construction by the end of 1998.

The Department is working with two regional water agencies—San Gorgonio Pass Water Agency and SBVMWD—to build the pipeline. SGPWA is the last original contractor to receive SWP water.

The completed East Branch Extension will include a reservoir in Crafton Hills and three pumping stations—two of them new—that will link parts of SBVMWD's service area and the eastern part of SGPWA's service area to the California Aqueduct. Phase I will include construction of about 13 miles of new pipeline and the use of approximately 19 miles of pipeline owned by SBVMWD as an interim delivery system. When the needs of SGPWA surpass 16 cfs, which is estimated to occur within 10 to 15 years, Phase II of the East Branch Extension will be built to bypass the SBVMWD Greenspot pipelines and pumping station, which have limited capacity.

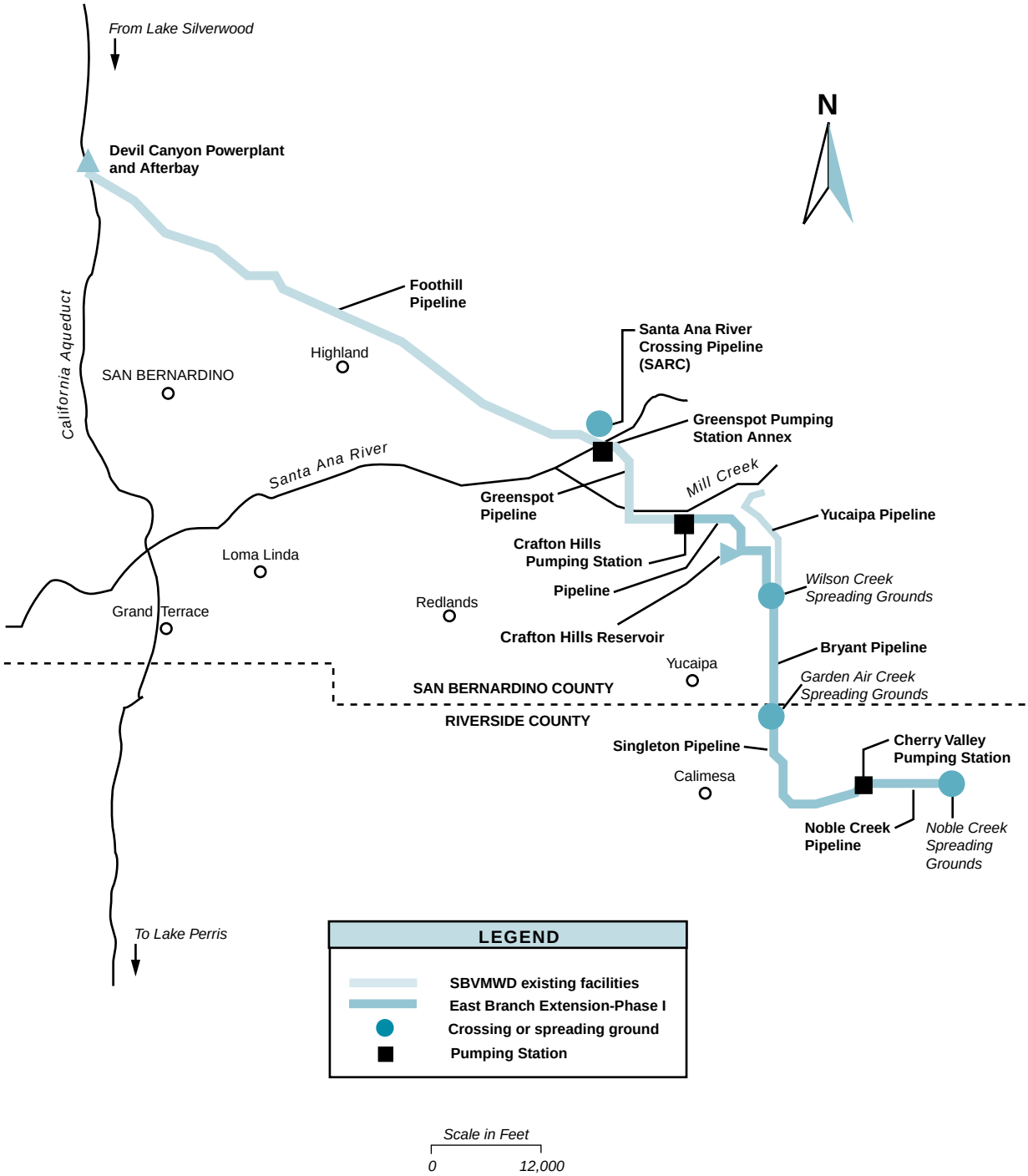
The pipeline will consist of about 13 miles of buried pipe in three contract reaches, conveying water from the Crafton Hills Pumping Station through Crafton Hills Reservoir and Cherry Valley Pumping Station to the Noble Creek spreading grounds.

Table ES-1
SWP Water Delivered by Category, 1962-98
(Acre-Feet)

Year	Entitlement Water [a]			Other Water Deliveries					Total Deliveries
				Surplus & Unscheduled					
	Municipal & Industrial (1)	Agricultural (2)	Total (3)	Municipal & Industrial (4)	Agricultural (5)	Other Water [b] (6)	Feather River Diversions [c] (7)	Fish and Wildlife/ Recreation Water (8)	(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	507,076	794,834	4,889	3,691,921
1989	1,602,454	1,251,293	2,853,747	0	0	474,559	830,500	8,135	4,166,941
1990	1,876,072	706,079	2,582,151	0	90	424,697	875,099	9,262	3,891,299
1991	536,669	12,444	549,113	3,521	0	551,051	565,395	4,879	1,673,959
1992	961,649	509,805	1,471,454	1,156	0	144,789	613,978	2,605	2,233,982
1993	1,064,866	1,250,369	2,315,235	0	0	254,854	822,589	2,609	3,395,287
1994	1,183,142	678,834	1,861,976	0	0	236,739	874,018	8,200	2,980,933
1995	819,554	1,211,869	2,031,423	0	0	78,425	860,077	2,575	2,972,500
1996	1,157,729	1,385,743	2,543,472	0	0	251,391	934,997	3,907	3,733,767
1997	1,261,270	1,085,937	2,347,207	0	0	322,000	993,211	4,146	3,666,564
1998	874,777	871,030	1,745,807	0	0	134,682	872,738	2,108	2,755,335
Total	**23,955,744**	**22,246,313**	**46,202,057**	**224,941**	**5,673,164**	**6,774,180**	**25,245,190**	**114,699**	**84,234,231**

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

Figure ES-1
East Branch Extension, Phase I



In March 1998, the two water agencies formally adopted the Supplemental EIR and approved construction of the project. The agencies will repay project costs in the form of principal and interest on SWP revenue bonds. About 45 percent of costs are allocated to SBVMWD and 55 percent to SGPWA. In December 1998, the Department sold $55 million in bonds to provide initial financing for project construction at an interest rate of 4.938 percent.

A major construction contract was advertised in November 1998; construction was scheduled to start in spring 1999.

The balance of the project costs will be financed, as needed, through sales of short-term commercial paper notes and SWP revenue bonds.

An extensive environmental mitigation plan for the project addressed the fact that the pipeline crosses habitat associated with two sensitive species—Plummer's mariposa lily and the coastal California gnatcatcher—although neither species has been documented in the area.

Power Resources

In 1998, SWP pumping plants consumed 3.45 billion kWh and powerplants generated 5.92 billion kWh of energy. The Department sold 6.9 billion kWh of energy in 1998 to 36 utilities and 19 power marketers for total revenues of $139.35 million. The Department also received $16.44 million in revenues for capacity, exchanges, transmission arrangements, and ancillary services. The sidebar below documents 1998 SWP power generation and consumption.

Deregulation of Electric Utilities

On March 31, 1998, California entered the world of electric utility deregulation as the California Independent System Operator began operation. The ISO, a non-profit public benefit corporation, took control of the operation of the transmission lines of the State's three investor-owned utilities—Pacific Gas & Electric, Southern California Edison, and San Diego Gas & Electric. The utilities still own the transmission lines, but the ISO coordinates where and how electricity moves throughout the State. Another non-profit public benefit entity created by electric utility deregulation was the California Power Exchange, which conducts a day-ahead market to establish prices and quantity of electricity for delivery for each hour of the following day and a day-of market to allow refinements closer to the delivery hour.

Deregulation was originally envisioned by the California Public Utilities Commission and enacted by the Legislature through Assembly Bill 1890. The bill, signed into law by the Governor in 1996, called for the deregulation of California's investor-owned utilities and opening the State's electricity market to competition. The Department was involved in the stakeholder processes that led to setting up the ground rules for the new system.

Power and transmission are crucial to SWP operations. The SWP is the largest single power consumer and the largest user of transmission capacity

SWP Power Generation and Consumption in 1998

Power Generation and Consumption	Millions of Kilowatt Hours
Energy generation by SWP facilities	5,915
Energy purchased under long-term agreements	3,621
Short-term energy purchases	809
Total energy available to the SWP	10,345
Energy sales	(6,900)
Net power consumption of the SWP	**3,445**

in California. SWP powerplants generate a large portion of the energy needed to move water within the State. The Department meets its remaining power needs by purchasing energy or making energy exchanges with other utilities. Power generated and used by SWP plants is conveyed over transmission lines. Consequently, the Department must also pay for transmission.

The Department relied on PG&E and SCE to submit its energy schedules to the ISO from March 31 through June 30, 1998. On July 1, 1998, the Department became its own Scheduling Coordinator and began to schedule transmission usage directly with the ISO.

As a public entity, the Department is not under the jurisdiction of the California Public Utilities Commission and, unlike the investor-owned utilities, is not required to buy and sell with California Power Exchange. Although the Department began buying and selling excess energy in CalPX's day-ahead market in July 1998, the Department can also buy and sell directly with other public entities and power marketers in California or outside California—whichever brings the best prices.

The deregulated industry has provided new opportunities and new markets for SWP power. In August 1998, the Department began participating in the ISO's ancillary services markets. Ancillary services are required by the ISO to ensure grid reliability. The Department's ability to control both its loads and generation allows the Department to readily participate in such markets.

Financial Analysis

In 1998, the Department continued to pay bondholders as scheduled. The SWP was financially viable and was indirectly paid for by the approximately 20 million water users who were served by the project. Direct payment was through the 29 long-term water contractors. In 1998, the SWP handled approximately $600 million in income and $600 million in expenses. The sidebar below shows a 1998 income statement for the SWP.

1998 Income Statement for the State Water Project

Revenues	**Thousands of Dollars**
Water contractor payments	620,817
Revenue bond cover adjustments	(38,303)
Rate management adjustments	(17,000)
Other revenue	18,947
Total operating revenues	**584,461**
Expenses	**Thousands of Dollars**
Project operations, maintenance, and power	331,395
Deposits to reserves	(14,700)
Water bond principal	77,279
Water bond interest	183,487
Total operating expenses and debt service	**577,461**
Net system revenues	**7,000**

Delta Resources and Environmental Issues

The 738,000-acre Delta is the heart of California's water environment. The Delta, at the convergence of the Sacramento and San Joaquin rivers, is a network of islands, sloughs, marshes, and reclaimed farmland that stretches from Sacramento to San Francisco Bay. A source of drinking water for about two-thirds of California's population, the Delta also provides irrigation for the Central Valley, which produces 55 percent of the country's fruits and vegetables.

Human activities, such as land development, water use, wastewater discharges, introduced species, and harvesting, have caused water quality and environmental problems in the Delta, as evidenced by population declines in many of its biological species.

The State Water Resources Control Board has adopted water quality control plans and policies to protect the Delta's water quality and environment and to control its water resources.

Water Quality Control Plan for the Delta

On December 15, 1994, federal and State officials and key stakeholder groups agreed on a protection plan for the Bay-Delta Estuary, entitled the Principles for Agreement. At the same time, the SWRCB issued a draft Water Quality Control Plan that was consistent with the Principles for Agreement.

On February 28, 1995, USBR and the Department filed a petition with SWRCB to change their water rights to conform to the Principles for Agreement and the draft WQCP. Their petition asked that USBR and the Department be allowed to divert or redivert water from each others' points of diversion in the southern Delta.

After revising its draft Plan in response to public comments, SWRCB adopted the *Water Quality Control Plan for the San Francisco Bay/ Sacramento-San Joaquin Delta Estuary* on May 22, 1995.

On June 8, 1995, SWRCB adopted Interim Water Right Order 95-6. This order temporarily conformed the terms and conditions of USBR and departmental water rights to reflect the 1995 Bay-Delta Plan and provided for joint points of diversion under certain restricted circumstances.

WR 95-6 was set to expire whenever a comprehensive water right decision allocating responsibilities to meet the 1995 Bay-Delta objectives was adopted or on December 31, 1998, whichever came first. The environmental analysis supporting WR 95-6 was based on Decision 1485. D-1485, adopted by SWRCB in 1978, set forth conditions, including water quality standards, export limitations, and minimum flow rates, for SWP and CVP operations in the Delta.

The Department and USBR both agreed to meet the standards in WR 95-6 until SWRCB adopted a new comprehensive water right decision and to operate the SWP and CVP in accordance with the Principles for Agreement.

Issues addressed in WR 95-6 included striped bass, Suisun Marsh, export limits, and Delta Cross Channel gate operations. WR 95-6 also temporarily changed the Vernalis salinity standard to match the corresponding salinity objective in the 1995 Bay-Delta Plan.

SWRCB began public hearings March 9, 1998, to consider ways to implement the 1995 Bay-Delta Plan. A revised Notice of Public Hearing was issued May 6, 1998. The revised notice divided the hearing into two phases. Phase I covered the issue of whether the order should be extended and, if so, for how long and under what terms. On July 1, 2, and 14, 1998, SWRCB conducted Phase I of the hearing and received evidence.

By December, it was evident that no comprehensive water right decision would be adopted by SWRCB before December 31, 1998, and that WR 95-6 would expire on December 31, 1998. To prevent this, SWRCB adopted Interim Water Right Order 98-9, extending WR 95-6 on December 3, 1998. WR 98-9 stated that WR 95-6 will expire upon adoption of a comprehensive water right

decision allocating responsibility for meeting 1995 Bay-Delta objectives or on December 31, 1999, whichever comes first. WR 98-9 effectively extended the expiration date of WR 95-6 for 1 year.

CALFED

The CALFED Bay-Delta Program is a cooperative effort among State and federal agencies and California's environmental, urban, and agricultural communities. CALFED was initiated in 1995 to address environmental and water management problems associated with the Bay-Delta system, the intricate web of waterways created at the junction of the San Francisco Bay and the San Joaquin rivers and the watershed that feeds them.

In May 1995, the CALFED Program began to develop a long-term plan to fix the San Francisco Bay/Sacramento-San Joaquin Delta. In cooperation with environmental, urban, and agricultural interests, CALFED developed three potential alternative solutions that were released in a draft programmatic EIS/EIR in March 1998. Several thousand comments on the three proposed alternatives were received through a 105-day public comment period. These comments, and additional extensive technical analyses, were used to develop the Revised CALFED Phase II Report.

On December 18, 1998, the Revised CALFED Phase II Report was released. The document provided a framework for restoring ecological health to the Bay-Delta Estuary, providing a more reliable water supply for all uses, and improving water quality in California.

The framework sought to achieve continuous improvements in four interrelated problem areas: ecosystem health, water quality, levee system integrity, and water supply reliability.

The actions were grouped under eight program elements:

- long-term levee protection;
- water quality;
- ecosystem restoration, including an environmental water account;
- water use efficiency;
- water transfers;
- watershed management;
- water storage; and
- water conveyance.

Further approval of the plan is expected in 1999, with implementation scheduled to begin in 2000.

Status of Threatened or Endangered Listings

Steelhead. In 1998, the National Marine Fisheries Service listed steelhead as threatened under the Federal Endangered Species Act.

Chinook Salmon. NMFS adopted late-fall, spring, and fall-run chinook salmon as candidate species for listing as threatened or endangered under FESA.

The California Fish and Game Commission listed the spring-run chinook salmon as threatened under the California Endangered Species Act.

Splittail. U.S. Fish and Wildlife Service deferred its decision to list the Sacramento splittail as a threatened species under FESA.

Sacramento splittail is a large minnow native to the Sacramento-San Joaquin Estuary. In 1994, USFWS proposed listing the fish as threatened under FESA, based on concerns about reduced abundance and distribution. Much of the data supporting this proposed listing was based on data collected during the 1987-92 drought and 1993-94 near-drought conditions. The original public comment period for the proposed listing closed on February 24, 1995, and USFWS was expected to make a final decision on the proposed splittail ruling by April 1998.

In June 1998, based on a request from the Department, USFWS reopened the comment period for the proposed listing of Sacramento splittail. Departmental staff prepared a report with recent data demonstrating that the splittail population was more resilient than previously thought. Biologists from the Department, the Department of Fish and

Game, and the Environmental Protection Agency authored a 1997 paper in the *Transactions of the American Fisheries Society*, which showed that wet conditions resulted in record or near-record number of splittail in 1995. Preliminary data from the Interagency Ecological Program suggested that the 1998 splittail year class was equally strong. Also, the population distribution was much wider and less susceptible to diversion effects than indicated in the original 1994 listing proposal. These and other comments were submitted to USFWS by July 17, 1998.

As of December 31, 1998, USFWS had not made a decision on the proposed listing.

Mitten Crabs

An introduced species, the Chinese mitten crab created problems for the fish salvage operation of the SWP and CVP in 1998. A crustacean with puffy brown claw coverings that resemble mittens, the crab is native to China. Commercial shrimp trawlers first detected the crab in South San Francisco Bay in 1992. The mitten crab now ranges throughout the Bay-Delta and its local tributaries, north up the Sacramento River to Colusa and south up the San Joaquin River to Highway 165 near the San Luis National Wildlife Refuge.

Each fall, mitten crabs migrate from fresh to salt water to spawn, bringing them near the federal Tracy Pumping Plant and State's Banks Pumping Plant in the south Delta. In 1996, the federal fish salvage facility at Tracy and the SWP's Skinner Fish Salvage Facility counted about 30 crabs. By fall 1997, 20,000 crabs appeared in the two facilities. In early fall 1998, 25,000 crabs invaded the Tracy facility daily, while the Skinner facility averaged around 100 crabs a day. By early October 1998, the estimated number of crabs entering the federal facility each day dropped to about 10,000, while the number entering the State facility each day had increased to about 10,000.

The sheer number of crabs in September and October severely impacted fish salvage operation at the SWP and CVP by clogging the systems, especially the fish holding tanks. Usually the fish are filtered out and transported for release in the Delta away from the pumps. With thousands of crabs clinging to the bins, the process was delayed while workers tried to separate the fish from the crabs. Departmental staff are analyzing the situation and are working to develop a method to deter the crabs in 1999.

Community Service

In addition to water supply, the Department provided education and outreach, recreation opportunities on the SWP, and local assistance to users of the SWP. In June 1998, the Department staged and videotaped a SWP history seminar featuring presentations by past directors and other experts on the planning and construction of the SWP. The Department also managed several programs—including the Water Use Efficiency Program, Agricultural Drainage Program, and Environmental Impact Document Review—that benefited local agencies and the 29 long-term water contractors.

Departmental Changes in 1998

David Kennedy Retirement

David Kennedy, who retired in 1998, served as Director of the Department of Water Resources from 1983 through 1998, a period that spanned the administration of two governors.

Under his direction, the Department dealt with drought, floods, and increasing environmental demands while at the same time expanding the SWP and implementing the Monterey Agreement, which gave SWP long-term water contractors more flexibility to conserve and use water. Kennedy implemented a drought water bank, helped develop landmark water transfer formulas, improved the Department's ability to respond to floods, and facilitated the 1994 Delta Accord, which provided a framework for long-term solutions to Delta water quality and supply.

Kennedy was elected to the National Academy of Engineering in 1998. The distinguished National Academy honors engineers who have made "important contributions to engineering theory and practice."

Chapter 1

The State Water Project

View of spillway at
Antelope Dam looking from downstream

California's diverse geography contains both the highest and lowest elevations in the coterminous United States, with a resulting diversity of climate that ranges from desert to alpine to subtropical. In a typical year, some areas receive as little as 2 inches of rain, while others receive more than 100. This diversity of geography and climate creates an intricate and constantly changing pattern of water supplies, in turn creating enormous challenges in managing this vital resource.

Like present-day Californians, the earliest settlers faced the problem of how best to conserve, control, and deliver water. Remains of aqueducts, canals, and dams are still found near some of California's original missions. The first recorded aqueduct was 6 miles long; it was built in 1770 to serve the San Diego mission. In the early twentieth century, several cities—San Francisco and Los Angeles among them—built aqueducts to convey water from the Sierra Nevada to other parts of the State.

In 1951, after many years of discussion and study, the Legislature authorized construction of a water storage and supply system to capture and store runoff in Northern California and deliver it to areas of need throughout the State. 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 in general obligation bonds, as authorized in the act, thereby obtaining funds to build the State Water Project. In 1962, the first water was delivered through a portion of the South Bay Aqueduct to two long-term contracting agencies in Alameda County.

Today the SWP, managed by the Department of Water Resources, is the largest state-built, multipurpose water project in the country. The SWP was designed and built to deliver water, control floods, generate power, provide recreational opportunities, and enhance habitats for fish and wildlife. About 20 million of California's estimated 33 million residents benefit from SWP water. SWP water irrigates about 600,000 acres of farmland, mainly in the south San Joaquin Valley.

Precipitation and Runoff

The water stored and delivered by the SWP originates from rainfall and snowmelt runoff in Northern and Central California's watersheds, where most of the State's precipitation occurs.

Since 1968, the Department has monitored and recorded annual precipitation and runoff, since precipitation, snowpack, and the rate and amount of snowmelt help determine how much water the SWP can deliver in any given year. The water year as designated by the Department runs from October 1 through September 30.

Water Delivery Facilities

The SWP depends on a complex system of dams, reservoirs, powerplants, pumping plants, canals, and aqueducts to deliver water. Although initial transportation facilities were essentially completed in 1973, other facilities have since been built, and still others are either under construction or are planned to be built as needed (Figure 1-1). The SWP facilities include 28 dams and reservoirs, 26 pumping and generating plants, and approximately 660 miles of aqueducts.

Figure 1-1
Names and Locations of Primary Water Delivery Facilities
Current and Projected, December 31, 1998

Existing long-term SWP water supply contracts call for the annual delivery of 4,103,651 acre-feet of entitlement water by 1997 through SWP facilities, gradually increasing to a maximum of 4,172,786 acre-feet by 2020. However, because of changes that have occurred since the long-term water contracts were signed in the 1960s, actual demand has not developed as projected. These changes include population growth variations, differences in local use, local water conservation programs, and conjunctive-use programs. To date, the most SWP entitlement water delivered in any year was about 2.8 million acre-feet in 1989. Nevertheless, demands for SWP water are expected to increase as the population of California continues to increase.

Project Design

Water from rainfall and snowmelt runoff is stored in SWP conservation facilities and delivered via SWP transportation facilities to water agencies and districts in Southern California, Central Coastal, San Joaquin Valley, South Bay, North Bay, and Upper Feather River areas.

Three small reservoirs—Lake Davis, Frenchman Lake, and Antelope Lake—are the northernmost SWP facilities. Situated on Feather River tributaries in Plumas County, these lakes are used primarily for recreation; they also provide water to the City of Portola and local agencies that have water rights agreements with the Department.

Downstream from these three lakes is Lake Oroville, the keystone of the SWP. Lake Oroville conserves water from the Feather River watershed. Created by Oroville Dam, the tallest earthfill dam in the Western Hemisphere, Lake Oroville is the project's largest storage facility, with a capacity of about 3.5 million acre-feet. An acre-foot is about 326,000 gallons.

Releases from Lake Oroville flow down the Feather River into the Sacramento River, which drains the northern portion of California's great Central Valley. The Sacramento River flows into the Sacramento-San Joaquin Delta—738,000 acres of land interlaced with channels that receive runoff from 40 percent of the State's land area. The SWP, along with the federal Central Valley Project and local agencies, diverts water from the Delta.

From the northern Delta, Barker Slough Pumping Plant diverts water for delivery to Napa and Solano counties through the North Bay Aqueduct, completed in 1988. Near Byron, in the southern Delta, the SWP diverts water into Clifton Court Forebay for delivery south of the Delta. The Banks Pumping Plant lifts water from Clifton Court Forebay into Bethany Reservoir; from Bethany Reservoir, the South Bay Pumping Plant lifts water into the South Bay Aqueduct to supply Alameda and Santa Clara counties. The South Bay Aqueduct provided initial deliveries in 1962 and has been fully operational since 1965.

Most of the water delivered to Bethany Reservoir from Banks Pumping Plant flows into the California Aqueduct. This 444-mile-long main aqueduct conveys water to the primarily agricultural lands of the San Joaquin Valley and the mainly urban regions of Southern California.

The California Aqueduct winds along the west side of the San Joaquin Valley. It transports water to O'Neill Forebay, Gianelli Pumping-Generating Plant, and San Luis Reservoir. San Luis Reservoir has a storage capacity of more than 2 million acre-feet and is jointly owned by the Department and the U.S. Bureau of Reclamation, which operates the CVP. The Department's share of gross storage in the reservoir is about 1,062,000 acre-feet. Generally, water is pumped into San Luis Reservoir during late fall through early spring months of the year and is temporarily stored for release back to the California Aqueduct to meet summertime peaking demands by SWP and CVP contractors.

SWP water not stored in San Luis Reservoir, and water eventually released from San Luis, continues to flow south through the San Luis Canal, which is a portion of the California Aqueduct jointly owned by the Department and USBR.

As the water flows through the San Joaquin Valley, numerous turnouts convey the water to farmlands within the service areas of the SWP and CVP.

Along its journey, the water is lifted more than 1,000 feet by four pumping plants—Dos Amigos, Buena Vista, Teerink, and Chrisman—before reaching the foot of the Tehachapi Mountains.

In the San Joaquin Valley near Kettleman City, Phase I of the Coastal Branch Aqueduct serves agricultural areas west of the California Aqueduct. This branch was extended in Phase II to serve municipal and industrial water users in San Luis Obispo and Santa Barbara counties beginning in August 1997.

The remaining water conveyed by the California Aqueduct is delivered to Southern California, where about two-thirds of California's population live. Before that water can be delivered, it must first cross the Tehachapi Mountains. Pumps at Edmonston Pumping Plant, situated at the foot of the mountains, raise the water 1,926 feet—the highest single lift of any pumping plant in the world. Then the water enters 8.5 miles of tunnels and siphons as it flows into Antelope Valley, where the California Aqueduct divides into two branches: the East Branch and the West Branch.

The East Branch carries water through Antelope Valley into Silverwood Lake in the San Bernardino Mountains. From Silverwood Lake, the water flows through the San Bernardino Tunnel into Devil Canyon Powerplant. The water continues down the East Branch to Lake Perris, the southernmost SWP reservoir.

The East Branch Extension, Phases I and II, will carry water from Devil Canyon Powerplant Afterbay to Cherry Valley, bringing water to Yucaipa, Calimesa, Beaumont, Banning, and other communities. The completed East Branch Extension will be a nearly 33-mile pipeline linking parts of San Bernardino Valley Municipal Water District service area and the eastern part of San Gorgonio Pass Water Agency service area to the California Aqueduct. Phase I is planned for completion in 2001; Phase II will be completed 10 to 15 years after Phase I.

Water in the West Branch flows through Warne Powerplant into Pyramid Lake in Los Angeles County. From there it flows through the Angeles Tunnel and Castaic Powerplant into Elderberry Forebay and Castaic Lake, terminus of the West Branch. Castaic Powerplant is operated by the Los Angeles Department of Water and Power.

The energy needed to operate the SWP, the single largest user of electrical power in California, comes from a combination of its own hydroelectric and coal-fired generation plants and power purchased from other utilities. The project's eight hydroelectric powerplants, which include three pumping-generating plants, and one coal-fired plant produce enough electricity in a normal year to supply about two-thirds of the necessary power.

Tables 1-1 through 1-5 present statistical information about primary reservoirs, primary dams, pumping plants, powerplants, and aqueducts. Additional information regarding operation of the plants under full development can be found in Chapter 10.

Table 1-1
Physical Characteristics of Primary Storage Facilities

Facility	*Gross Capacity (Acre-feet)*	*Surface Area (Acres)*	*Shore-line (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	11,800	630	10
Thermalito Afterbay	57,000	4,300	26
Thermalito Diversion Pool	13,400	320	10
Clifton Court Forebay	31,300	2,180	8
Bethany Reservoir	5,100	180	6
Lake Del Valle	77,100	1,060	16
San Luis Reservoir	2,027,800	12,520	65
SWP storage, 1,062,183 AF			
O'Neill Forebay	56,400	2,700	12
SWP storage, 29,500 AF			
Los Banos Reservoir	34,600	620	12
Quail Lake	7,600	290	3
Pyramid Lake	171,200	1,300	21
Elderberry Forebay	32,500	500	7
Castaic Lake	323,700	2,240	29
Silverwood Lake	75,000	980	13
Lake Perris	131,500	2,320	10

Table 1-2
Physical Characteristics of Primary Dams

Facility	Crest Elevation (Feet)	Structural Height (Feet)	Crest Length (Feet)	Structural Volume (Thousand Cubic Yards)
Antelope	5,025	120	1,320	380
Frenchman	5,607	139	720	537
Grizzly Valley	5,785	132	800	253
Oroville	922	770	6,920	80,000
Thermalito Diversion	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	250	121	3,940	1,400
Del Valle	773	235	880	4,150
Sisk	554	385	18,600	77,645
O'Neill	233	88	14,350	3,000
Los Banos Detention	384	167	1,370	2,100
Pyramid	2,606	400	1,090	6,000
Elderberry Forebay	1,550	200	1,990	6,000
Castaic	1,535	425	4,900	46,000
Cedar Springs	3,378	249	2,230	7,600
Perris	1,600	128	11,600	20,000

Table 1-3
Pumping Plant Characteristics

Facility	Number of Units	Normal Static Head (Feet)	Total Flow at Design Head (cfs)	Total Motor Rating (hp)
Thermalito	3 (p-g) [a]	85-101	9,120	120,000
Hyatt	3 (p-g) [a]	410-660	5,610	519,000
Barker Slough	9	95-120	228	4,800
Cordelia	11	104-439	138	5,600
Banks	11	236-252	10,670	333,000
South Bay	9	566	330	27,750
Del Valle	4	0-38	120	1,000
Gianelli	8 (p-g) [a]	99-327	11,000	504,000
Dos Amigos	6	107-125	15,450	240,000
Las Perillas	6	55	461	4,050
Badger Hill	6	151	454	11,750
Devil's Den [b]	6	521	134	10,500
Bluestone [b]	6	481	134	10,500
Polonio Pass [b]	6	533	134	10,500
Buena Vista [b]	10	205	5,405	144,500
Teerink [b]	9	233	5,445	150,000
Chrisman [b]	9	518	4,995	330,000
Edmonston [b]	14	1,926	4,480	1,120,000
Oso	8	231	3,252	93,800
Pearblossom	9	539-546	2,575	203,200

[a] The p-g indicates pumping-generating units.
[b] These plants have one unit in reserve.

Table 1-4
Powerplant Characteristics, by Type and Facility

Type and Facility	*Number of Units*	*Normal Static Head (Feet)*	*Total Flow at Design Head (cfs)*	*Total Generator Rating (kW)*
Hydro				
Thermalito				
Diversion Dam	1	63-77	615	3,000
Thermalito	4 (3 p-g) [a]	85-101	17,400	115,000
Hyatt	6 (3 p-g) [a]	410-675	16,950	644,250
Gianelli	8 p-g [a]	99-327	16,960	424,000
SWP share				222,100
Alamo	1	115-141	1,740	17,000
Warne	2	719-739	1,564	74,300
Mojave Siphon	3	95-146	2,880	32,400
Devil Canyon	4	1,406	2,940	280,000
Castaic				
Total	7 (6 p-g) [a]	830-1,098	17,600	1,250,000
SWP share	n/a	n/a	n/a	n/a
Thermal				
Reid Gardner, Unit 4	1 [b]			275,000
SWP ownership share	[c]			169,500

[a] The p-g indicates pumping-generating units.
[b] Life of the plant is expected to extend through 2013.
[c] Actual generating capacity is 186,450 kW.

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
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	0.0	15.0	97.9	2.7	115.6
Subtotal	*9.2*	*24.1*	*104.3*	*9.9*	*147.5*
Total	**15.7**	**417.5**	**205.4**	**23.2**	**661.8**

Additional Construction

SWP aqueduct facilities were initially designed and constructed to provide service to all agencies to meet their water delivery needs up to 1990. Project water-conservation reservoirs were planned to be constructed in stages as water demands increased. Oroville and San Luis were the first SWP conservation reservoir facilities constructed. Additional SWP facilities were scheduled to meet increased demands. It was anticipated that population growth in delivery service areas and water supply areas of origin would influence the final schedule for the additional SWP facilities. However, increased costs, environmental issues, and increased non-SWP demands for limited water supplies delayed the construction schedule for some planned additional facilities.

In response to changes in water management policy, the Department continues to reassess plans for the additional facilities that will incorporate increased environmental safeguards while also increasing the SWP delivery yield. Developing those plans involves the time-consuming process of finding technically suitable projects and satisfying the many complex and dynamic environmental procedures, laws, and regulations.

In the mid-1980s, the Department began planning an offstream storage complex, Los Banos Grandes, in Merced County. Initial planning for Los Banos Grandes was completed. However, because of environmental concerns, additional planning for Los Banos Grandes has been suspended until those concerns have been addressed. The Department also developed alternative methods of storing water, including the Kern Water Bank, a conjunctive-use groundwater storage facility located in Kern County.

The signing of the Monterey Agreement in December 1994 set the principles for permanently transferring the State-owned Kern Fan Element of the Kern Water Bank from the Department to two agricultural contractors, Kern County Water Agency and Dudley Ridge Water District. The transfer occurred August 9, 1996.

The Department continues to plan, design, and construct transportation and power-producing facilities for the SWP. Mojave Siphon Powerplant was completed in 1996. The enlarged Devil Canyon Powerplant and the new Devil Canyon Powerplant Second Afterbay became operational in 1995. In addition, the second phase of the Coastal Branch of the California Aqueduct began operation in August 1997. The Coastal Branch can transport about 50,000 acre-feet of water annually to San Luis Obispo and Santa Barbara counties.

Methods of Financing

Project facilities have been constructed with four general types of financing: general obligation bonds and tideland oil revenues (under the Burns-Porter Act, which was approved by the Legislature in 1959, and the bond issue approved by voters in 1960); revenue bonds; and capital resources revenues. Repayment of these funds and the operations, maintenance, power, and replacement costs associated with water supply are paid by the 29 agencies and districts that have long-term contracts with the Department for SWP water; those costs are repaid as they are incurred.

The contracts initially provided for a combined maximum annual entitlement of 4,230,000 acre-feet of water supply. As a result of contract amendments in the 1980s and the Monterey Amendment, the current combined maximum annual entitlement totals 4,172,786 acre-feet. The contracts are in effect for the longest of the following periods:

- the project repayment period, which extends to the year 2035;
- 75 years from the date of the contract; or
- the period ending with the latest maturity date of any bond used to finance the construction costs of project facilities.

Long-Term Contracting Agencies

From 1963 through 1967, 32 agencies or districts signed long-term water supply 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. The 29 agencies and districts that now have long-term contracts with the Department as of December 31, 1998, are listed in Figure 1-2 and Table 1-6.

Figure 1-2 shows the name and location of each contracting agency and district and lists the first year of SWP delivery service for each. Table 1-6 presents information about each contracting agency.

Figure 1-2
Names, Locations, and First Year of Service of
Long-Term Contracting Agencies, December 31, 1998

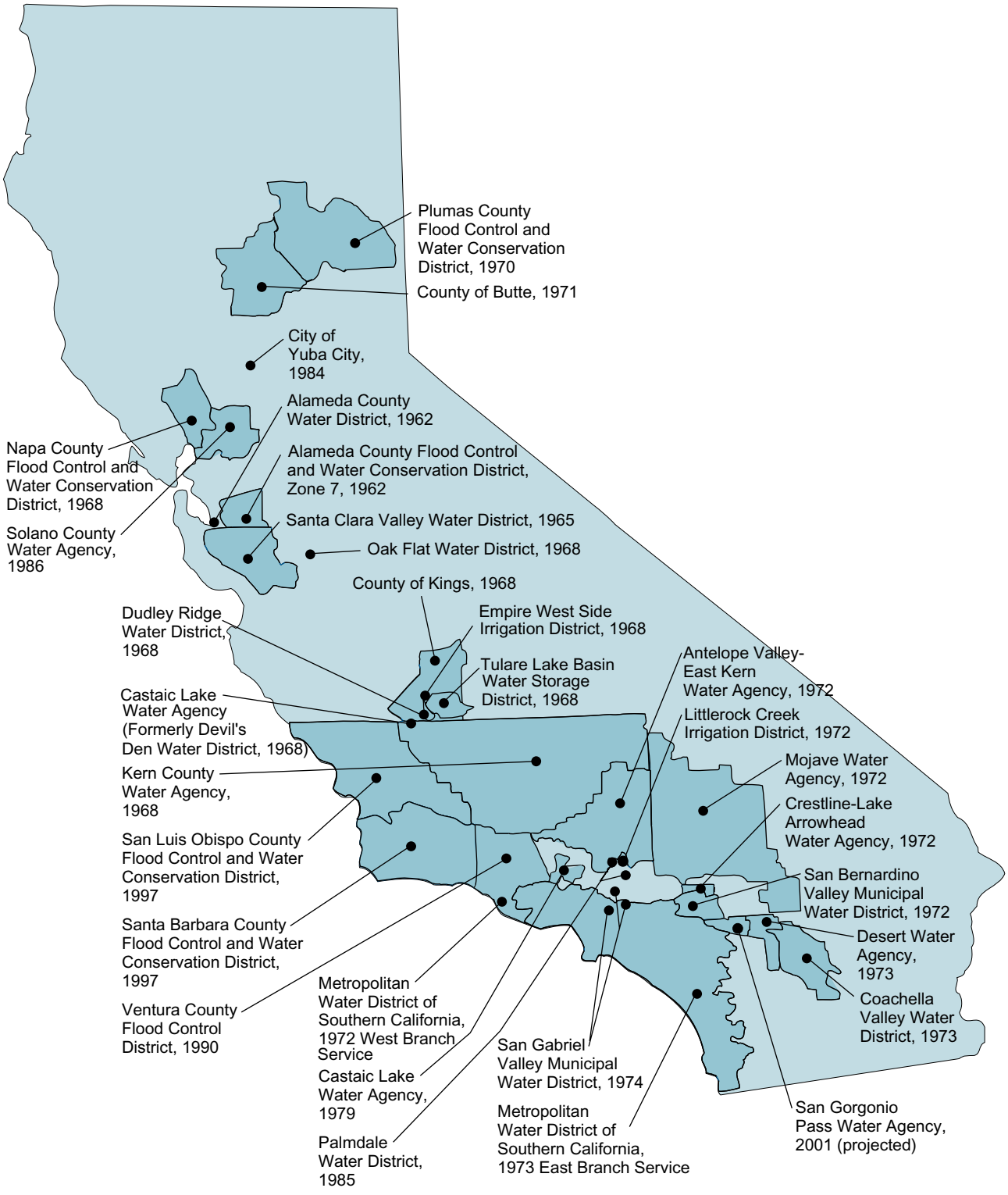


Table 1-6
Long-Term Water Supply Contracting Agencies, by Area, as of December 31, 1998

Contracting Agency	Cumulative Deliveries through December 31, 1998 (Acre-Feet) [a]	Maximum Annual Entitlement (Acre-Feet)	Payments through December 31, 1998 (Dollars)	Gross Area as of December 31, 1998 (Acres)	Assessed Valuation 1998 (Dollars) [b]	Estimated Population December 31, 1998
Upper Feather River Area						
City of Yuba City	8,263	9,600	1,932,874	5,107	1,126,662,000	34,350
County of Butte	8,601	1,200	515,269	1,069,000	6,239,500,000	172,600
Plumas County Flood Control and Water Conservation District	10,472	1,400	1,010,428	1,676,056 [c]	2,060,744,342 [c]	21,200
Subtotal	*27,336*	*12,200*	*3,458,571*	*2,750,163*	*9,426,906,342*	*228,150*
North Bay Area						
Napa County Flood Control and Water Conservation District	165,908	11,710	40,305,811	510,010	11,375,403,517	124,588
Solano County Water Agency	279,931	38,710	49,763,275	537,600	19,489,682,982	383,620
Subtotal	*445,839*	*50,420*	*90,069,086*	*1,047,610*	*30,865,086,499*	*508,208*
South Bay Area						
Alameda County Flood Control and Water Conservation District-Zone 7	719,868	46,000	54,258,511	272,000	12,592,234,275	161,600
Alameda County Water District	754,188	42,000	58,042,063	64,640	24,333,736,000	302,450
Santa Clara Valley Water District	2,764,343	100,000	186,321,092	849,000	147,074,863,200	1,715,374
Subtotal	*4,238,399*	*188,000*	*298,621,666*	*1,185,640*	*184,000,833,475*	*2,179,424*
San Joaquin Valley Area						
County of Kings	67,837	4,000	2,666,288	893,300	3,847,066,037	122,848
Castaic Lake Water Agency	419,322			8,700	4,300,000	0
Dudley Ridge Water District	1,576,653	53,370	44,173,177	37,568	44,500,000	36
Empire West Side Irrigation District	89,417	3,000	2,263,101	7,400	[d]	50
Kern County Water Agency	24,151,082	1,087,730	1,024,093,045	5,161,000	36,509,755,659	603,300
Oak Flat Water District	156,931	5,700	3,532,747	4,500	[d]	10
Tulare Lake Basin Water Storage District	3,363,061	118,500	88,214,748	189,519	152,288,305	23
Subtotal	*29,824,303*	*1,272,300*	*1,164,943,106*	*6,301,987*	*40,557,910,001*	*726,267*
Central Coastal Area						
San Luis Obispo County Flood Control and Water Conservation District	4,791	6,215	25,454,042	2,131,300	15,442,814	239,000
Santa Barbara County Flood Control and Water Conservation District	27,297	38,986	106,104,721	1,775,296	12,564,719,323	409,000
Subtotal	*32,088*	*45,201*	*131,558,764*	*3,906,596*	*12,580,162,137*	*648,000*
Southern California Area						
Antelope Valley-East Kern Water Agency	1,032,916	138,400	227,272,654	1,525,029	11,661,403,243	310,000
Castaic Lake Water Agency [e]	244,910	54,200	108,773,412	133,700	12,073,683,645	184,700
Coachella Valley Water District	535,338	23,100	115,240,259	637,600	11,132,616,000	200,000
Crestline-Lake Arrowhead Water Agency	32,741	5,800	14,121,209	55,100	1,500,527,807	25,000
Desert Water Agency	756,443	38,100	136,835,737	209,760	4,377,080,770	62,000
Littlerock Creek Irrigation District	13,651	2,300	3,890,965	10,000	106,085,538	2,900
Metropolitan Water District of Southern California	16,255,296	2,011,500	4,803,705,474	3,307,450 [f]	999,704,336,150 [f]	16,680,000 [f]
Mojave Water Agency	150,204	75,800	107,284,689	3,160,400	13,123,135,905	323,443
Palmdale Water District	92,556	17,300	30,834,697	119,680	807,757,000	85,000
San Bernardino Valley Municipal Water District	298,735	102,600	246,399,326	210,000	14,907,805,419	600,000
San Gabriel Valley Municipal Water District	217,761	28,800	77,129,558	18,297	8,826,776,962	211,369
San Gorgonio Pass Water Agency	0	0	35,307,414	140,600	1,945,425,320	44,600
Ventura County Flood Control District	9,524	20,000	43,358,018	308,252	759,837,301,346	457,000
Subtotal	*19,640,075*	*2,517,900*	*5,950,153,412*	*9,835,868*	*1,840,003,935,105*	*19,186,012*
Total, State Water Project	**54,208,040**	**4,086,021**	**7,638,804,605**	**25,027,864 [g]**	**2,117,434,833,559 [g]**	**23,476,061 [g]**

[a] All water delivered to long-term SWP contractors, including carryover entitlement, interruptible entitlement, surplus, unscheduled, exchange, permit, purchased, local, and non-SWP water.

[b] Statutes of 1978, Chapter 1207, added Section 135 to the Revenue and Taxation Code, requiring assessment at 100 percent of full value for the 1981-1982 fiscal year and fiscal years thereafter.

[c] Total of all Plumas County Flood Control and Water Conservation District, including Last Chance Creek Water District.

[d] Assessed valuation not available on an agency area breakdown.

[e] District includes land in the San Joaquin Valley Area formerly known as Devil's Den Water District.

[f] Total for MWD, including Calleguas Municipal Water District, which is common to MWD and Ventura County Flood Control District.

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

Chapter 2
Delta Resources

Steamboat Slough with
Mount Diablo in the background

Significant Events

Developing Habitats

- The Delta Flood Protection Program continues to make significant strides to create valuable habitat in the Delta. The program is in the process of developing 282.7 acres of various habitat types for mitigation and 19.38 acres for enhancement. The program is also developing 36,350 lineal feet of shaded riverine aquatic habitat, of which 12,898 lineal feet will be used for mitigation of program levee work and 23,452 lineal feet for enhancement of Delta levee habitat.

Over the past 40 years many programs were developed and implemented by federal and State agencies, including the Department of Water Resources, to manage the Sacramento-San Joaquin Delta as both a unique environmental resource and as one of California's major water supply sources.

The common goals of these programs have been to:

- improve water supply reliability to the State Water Project, Central Valley Project, and Delta water users;
- determine levels of flow and salinity necessary to protect fish and wildlife habitat; and
- devise methods to control flooding, protect fish and wildlife, and provide recreational activities.

Delta Water Management Programs

Over the last decade or so, the Department's planning programs focused on solving water management problems in three distinct areas of the Sacramento-San Joaquin Delta: the north Delta, west Delta, and south Delta (Figure 2-1). In 1992, the Governor announced a new water policy to "fix the Delta." Solutions to improve conditions in the Delta would address fish and wildlife needs, efficiency and reliability of water export systems, water quality needs, and the physical integrity of Delta channels and levees. Meanwhile, long-term Delta solutions would be deferred to a separate process and would include public involvement from all interest groups. As part of the policy to "fix the Delta," short term actions would be taken in the south Delta.

In June 1994, a Framework Agreement between the federal and State governments defined a cooperative process for developing a long-term solution to the water supply, water quality, and ecosystem problems of the Delta. The CALFED Bay-Delta Program, a component of the process, is conducting the required technical analyses and developing programmatic level environmental documentation for the long-term solution. The program includes extensive public outreach and input.

Interim South Delta Program

The Interim South Delta Program requires accelerated construction of south Delta facilities to improve Delta water conditions while the Bay-Delta Program's long-term solution is developed and implemented. In combination with other actions, this program is being considered for implementation during the next 5 to 7 years as part of the CALFED preferred alternative for the Delta. The ISDP is designed to improve water levels and circulation in south Delta channels for local agricultural diversions. The program will also improve south Delta hydraulic conditions to increase diversions into Clifton Court Forebay and maximize the frequency of full pumping at Banks Pumping Plant. Other potential components, such as fish screening facilities, are being considered as part of ISDP through the CALFED process.

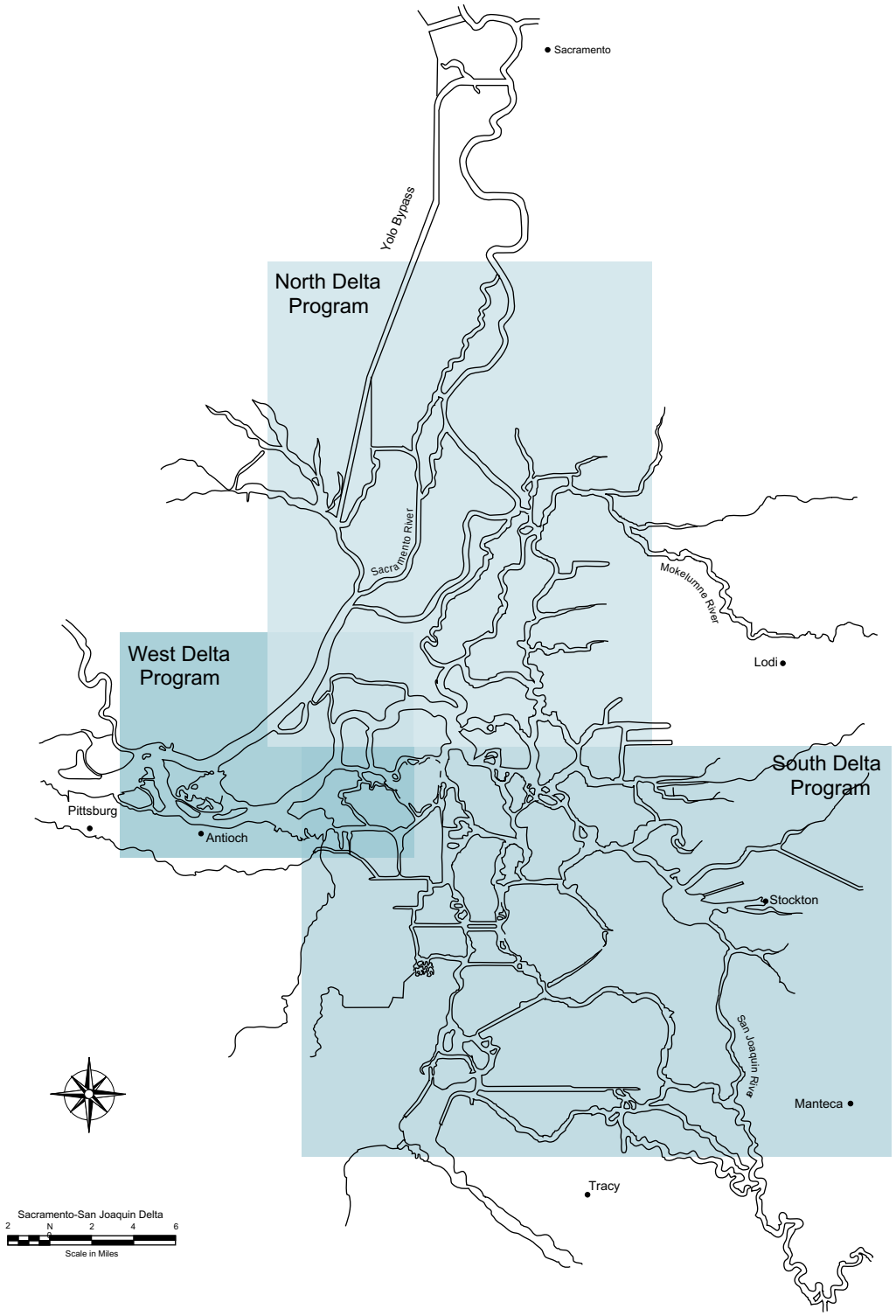
Preferred Alternative

The current preferred alternative consists of:

- three flow-control structures to improve local water levels and circulation in south Delta channels;
- a fish-control structure to improve fish migration in the San Joaquin River;
- approximately 5 miles of dredging in existing south Delta channels to improve conveyance and circulation;
- an additional intake to Clifton Court Forebay north of the existing intake; and
- to increase diversions into Clifton Court Forebay.

Increasing diversions into Clifton Court Forebay, subject to receiving a U.S. Army Corps of Engineers permit, would allow Banks Pumping Plant to pump up to its maximum design capacity of 10,300 cubic

Figure 2-1
Boundaries of North, West, and South Delta Water Management Programs



feet per second with fewer restrictions. It would also improve the reliability of SWP water supply and increase operational flexibility. In addition, the proposal to construct flow-control structures in south Delta channels would allow the Department and U.S. Bureau of Reclamation to meet the obligations of a pending agreement with South Delta Water Agency to improve conditions for local agricultural diversions. The fish-control structure would benefit both spring and fall salmon migrations in the San Joaquin River.

Environmental Review Process

A draft environmental impact report/environmental impact statement for the ISDP was released in August 1996; a final EIR/EIS is tentatively scheduled for release in late 2000. Other potential components of ISDP are under consideration as part of the CALFED Bay-Delta Program staged approach to a long-term Delta solution. Once the final EIR/EIS is completed, a notice of determination and record of decision will be filed. State and federal regulatory agencies may then act on permits required to construct and operate the proposed facilities.

The necessary permits would be issued by the Corps according to both Section 404 of the Federal Water Pollution Control Act (Clean Water Act) for dredging operations and Section 10 of the Rivers and Harbors Act for Navigation. Approval for the permits must be coordinated with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, the Environmental Protection Agency, and the California Department of Fish and Game.

Temporary Barriers Project

The Department has installed and operated temporary barrier facilities in the south Delta since 1990 to improve south Delta conditions and collect data to design and operate permanent barrier facilities, as proposed in the ISDP. Data collected in the Temporary Barriers Program has assessed the ability of south Delta barriers to reduce or eliminate adverse water levels and improve local hydraulic circulation patterns.

In addition, biological monitoring programs were conducted to:

- determine potential effects of barriers on Delta fish and vegetation;
- evaluate and review computer model calibration; and
- develop comprehensive environmental information for the design and operation of permanent barrier facilities.

Clean Water Act

Section 404 of the Federal Water Pollution Control Act (Title 33, United States Code Section 1344 [1977]), also known as the Clean Water Act, requires that a permit be obtained from the U.S. Army Corps of Engineers for any activity that results in discharge of dredged material or placement of fill material in the waters of the United States. Section 404 has been broadly interpreted by the federal courts to include structures or fills introduced into waters within a state that may be used for interstate or foreign commerce. Section 402 of the Clean Water Act established a permit system known as the National Pollutant Discharge Elimination System to regulate point sources of discharges in navigable waters of the United States.

The Porter-Cologne Water Quality Control Act is California's comprehensive water quality control law and is a complete regulatory program designed to protect water quality and beneficial uses of the State's water. In 1972, the Porter-Cologne Act was amended to give California the authority and ability to operate the NPDES permits program. These laws require regional water quality plans to be adopted and implemented by issuing waste discharge requirements to each discharger of waste that could impact the waters of the State.

Temporary rock barriers are being tested at four sites:

- Old River at head, in Old River where it splits from the San Joaquin River;
- Old River near Tracy, in Old River one-half mile east of the Tracy Pumping Plant intake and about 8 miles northwest of the city of Tracy;
- Middle River, just south of the confluence of Middle River, Trapper Slough, and North Canal; and
- Grant Line Canal, 420 feet east of the Tracy Boulevard Bridge.

The barrier at the head of Old River prevents San Joaquin River flow from entering Old River and flowing toward export facilities. The additional flow

in the San Joaquin River helps guide San Joaquin salmon to the ocean in the spring and improves dissolved oxygen levels for upstream salmon migration in the fall. The other barriers have culverts with flap gates that improve water levels and circulation in south Delta channels during the irrigation season.

Since 1963 the Old River at Head barrier has been installed in the fall and intermittently, since 1992, in the spring. High San Joaquin River flows sometimes prevent the Old River at Head barriers from being installed. The Old River barrier near Tracy has also been seasonally installed since 1991, as has the Middle River barrier since 1987 and the Grant Line Canal barrier since 1996.

Interim North Delta Program

In fall 1995, the Department suspended Interim North Delta Program planning activities in deference to the ongoing efforts of the CALFED Bay-Delta Program. The original objectives of the INDP were to:

- alleviate flooding in the north Delta;
- reduce reverse flow in the lower San Joaquin River;
- improve water quality;
- reduce project impacts on fisheries; and
- increase flexibility of the SWP for water transfers and improve reliability of its water supply.

The CALFED Bay-Delta Program addresses the issues identified in the INDP in a comprehensive manner, with input from involved stakeholders, regulatory agencies, and cooperating agencies. The Department provides logistical and technical support to help assure that solutions are technically and economically sound, and that the large body of information developed as part of the INDP is fully integrated into the CALFED process.

West Delta Program

The objectives of the West Delta Program are to:

- effectively manage SWP-owned lands on Sherman and Twitchell islands (approximately 12,000 acres total);
- improve the integrity of local levees;
- implement land-use management to control subsidence and soil erosion on Sherman and Twitchell islands;
- implement mitigation requirements associated with the Temporary Barriers Program and proposed ISDP; and
- provide diverse habitat for wildlife and waterfowl.

The Department contracted with a consultant to develop preliminary wildlife management plans for the two islands. The plans are designed to benefit species of wildlife that occupy wetland, upland, and riparian habitats and to provide recreational opportunities for hunting and viewing. In addition, property acquired and potential habitat developed by the Department could mitigate impacts associated with current and future Delta water management programs, including those being proposed by the Department and the CALFED Bay-Delta Program.

The Department is a major landowner on both Twitchell and Sherman islands and holds two out of the three trustees' positions for Reclamation District 1601 (Twitchell Island) and Reclamation District 341 (Sherman Island). This allows the Department to control the management and operation of each district with the goal of improving conditions and accountability. The reclamation districts provide levee maintenance, island drainage, and some internal water supply. The districts also assess the landowners for the operational needs of the public districts.

Delta Flood Control Program

The Sacramento-San Joaquin Delta is one of California's most valuable and irreplaceable resources. Without adequate levee protection, the Delta, as we know it today, would be lost. The levees serve many needs. They protect valuable wildlife habitat, farms, homes, urban areas, recreational developments, highways and railroads, natural gas fields, utility lines, major aqueducts, and other public developments. The levees are critical to the protection of Delta water quality and serve a significant function in the State's water transfer system. The State Legislature, recognizing the importance of the Delta following the floods of the early 1980s, enacted the Delta Flood Protection Act of 1988, (SB 34 [Water Code Sections 12310 *et seq.*, and 12980 *et seq.*]). With SB 34, the

Legislature declared that, "...the Delta is endowed with many invaluable and unique resources and that these resources are of major statewide significance."

In SB 34, the Legislature declared its intent to appropriate $12 million annually through fiscal year 1998-99 for the Delta Flood Protection Fund. Six million dollars of the appropriation are for local assistance under the Delta Levee Maintenance Subventions Program. The remaining $6 million are for Special Delta Flood Control Projects, including subsidence studies and monitoring on Bethel, Bradford, Holland, Hotchkiss, Jersey, Sherman, Twitchell and Webb islands, and the towns of Thornton and Walnut Grove. Currently, the program has received more than $86 million in appropriated funds and, combined with local funds, has realized $115 million in levee improvements. In 1996, AB 360 was signed into law. This law expanded the area covered by the Special Projects Program to include the remainder of the legal Delta and Suisun Marsh. Delta Flood Control Program staff at the Central District is developing a prioritization process for distributing funds under AB 360. Available funds for the program run out on June 30, 2000, and no new funding has been made available.

Delta Levee Maintenance Subventions Program

The Subventions Program provides funding, as a reimbursement, to local Delta reclamation districts to assist levee maintenance, repair, and rehabilitation in compliance with the State's Flood Hazard Mitigation Plan objectives. Each year, districts wanting to participate in the program prepare work plans and file applications with the State Reclamation Board for funding.

After applications and work plans are reviewed, the Department requests the approval of SRB. SRB is also requested to approve each district's maximum possible reimbursement (up to 75 percent for levee work and habitat mitigation) and maximum advanced reimbursement amount based on program reimbursement priorities and available funding.

Upon SRB approval, agreements are executed between SRB and each participating district, which state that eligible work will be completed during the fiscal year. All work must be in compliance with appropriate State and federal laws, including the California Environmental Quality Act, the State and federal Endangered Species Acts, Section 1600 of the Fish and Game Code, Section 404 of the Clean Water Act, and approval by DFG that a net long-term habitat improvement of riparian, fisheries, and wildlife habitat will result.

Special Projects

The Special Flood Control Projects Program assists the eight western islands, other locations in the Delta and northern Suisun Bay, and the towns of Thornton and Walnut Grove. In July 1989, the Legislature approved a plan of action for flood control for the towns of Thornton and Walnut Grove.

For the eight western Delta islands, the California Water Commission approved a report of initial or "fast-track" actions in September 1989 and approved the long-term actions and priorities in May 1990.

Endangered Species Acts

In planning, constructing, and operating the 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 (Title 16, United States Code sections 1531-1544 [1973]) and the California Endangered Species Act (California Fish and Game Code sections 2050-2098 [1984]). An endangered species is one in danger of extinction in all or a significant portion of its range; a threatened species is one likely to become endangered. These acts are designed to protect threatened and endangered species by:

- ensuring federal and State agencies adopt measures to protect the species during the design, construction, and operation of projects and in taking other forms of agency action; and
- prohibiting the take of endangered species.

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

The long-term plans are used by the Department to determine how to best use appropriations to protect these islands and include: rehabilitating threatened levees through the use of imported dredged material; verifying elevations in the Delta through the use of Global Positioning System equipment; and upgrading levees to the standards included in Bulletin 192-82, *Delta Levees Investigation*. Depending on the ability-to-pay of each reclamation district, the Department pays up to 100 percent of the cost of these activities. Districts receiving funds under the Special Flood Control Projects Program are required to participate in habitat improvement programs to ensure a net long-term habitat improvement.

Delta Levees Habitat Improvement

The Delta Flood Protection Program continues to make significant strides in its efforts to create valuable habitat in the Delta. The program is in the process of developing 282.7 acres of various habitat types for mitigation and 19.38 acres for enhancement. The program is also in the process of developing 36,350 lineal feet of shaded riverine aquatic habitat, of which 12,898 lineal feet will be used for mitigation and 23,452 lineal feet for enhancement.

Mitigation projects include projects on Medford, Twitchell, Bethel, Kimball, and Staten islands, and Terminous, Palm, Wright-Elmwood, and Thornton-New Hope tracts. *Enhancement projects* include participation in the joint Department of Water Resources/U.S. Army Corps of Engineers Lower Sacramento River Revegetation Project, and projects on Decker, Tyler, Staten, Sherman, and Twitchell islands, and Webb,Veale, Franks, and McCormack-Williamson tracts. Projects that may, or will be used for both mitigation and enhancement, include projects on Prospect Island and Canal Ranch.

The Department, DFG, and reclamation districts are making substantial progress in providing adequate avoidance or mitigation of net long-term habitat losses and in enhancing habitat in the Delta. Many participating districts are identifying potential habitat mitigation and enhancement areas that may be developed into diverse habitats as the program's habitat development process moves forward. The Department and DFG will continue to work with the reclamation districts to improve the quantity and quality of habitat in the Delta.

Subsidence Investigations

Organic soils in the Sacramento-San Joaquin Delta are now between 10 and 25 feet below sea level. The peat has oxidized and subsided since the mid-1800s, when the land was first drained and levees constructed. The Legislature recognized the problem and, with the Delta Flood Protection Act, requested the Department to monitor subsidence and study its causes.

The Department and the U.S. Geological Survey conduct an ongoing subsidence investigation in the Delta. Preliminary data indicate that:

- land management practices substantially influence subsidence rates;
- cultivation practices that raise soil temperature and lower the water table dramatically increase oxidation of the peat soils;
- conversion of highly organic peat soils to carbon dioxide gas appears to be the primary cause of subsidence; and
- the presence of vegetation mats suggests that shallow permanent flooding will reverse subsidence through biomass accretion.

CALFED granted Category III funds to the Department to construct a Subsidence Reversal Demonstration Project on Twitchell Island. In 2001, USGS and area consultants will set up a learning laboratory to find ways to reverse subsidence. This project will combine the cultivation of tules and other aquatic vegetation in shallow ponds with diversion and settling of silt-laden water from the San Joaquin River. The soil build-up and organic soil oxidation rates will be measured.

Reuse of Dredged Material for Delta Levees

As local sources of fill material for levee repair are depleted, new economical sources must be located. The Department, in coordination with the Corps, local reclamation districts, and the Central Valley Regional Water Quality Control Board, implemented three pilot projects—at Sherman, Twitchell, and Jersey islands—to demonstrate the viability of relocating material from the San Francisco Bay Area to the Delta. These pilot projects required extensive monitoring and testing programs and no adverse salinity impacts were found.

Based on these results, the Central District Flood Protection and Geographic Information Branch worked on increasing opportunities to reuse clean, bay-dredged materials in the Sacramento-San Joaquin Delta.

Current efforts for beneficial reuse of dredged material from the Bay Area principally consist of:

- coordination with the regional board to address water quality concerns;
- discussions with the Corps to promote identification and acquisition of federal funds to support beneficial reuse projects;
- providing assistance to the Long-Term Management Strategy and Save the Bay in preparing proposals to CALFED to evaluate the potential for Delta reuse of clean, dredged material from the bay;
- coordination with the Corps, Regional Board, CALFED, and RD 341 to stockpile dredged material from Suisun Bay and New York Slough on Sherman Island—this is a long-term project and could consist of 200,000 cubic yards of dredged material annually for 5 years; and
- levee restoration and habitat projects proposed or under construction. Projects include stability berms on Bradford Island to reinforce cracking and foundations; long-term levee improvements on Sherman Island, including stability berms to strengthen levees in critical areas; stability berms to strengthen historically weak levees along Three Mile Slough on Twitchell Island; construction of a 42-acre island for habitat restoration on Franks Tract; levee repair of areas with stability and seepage problems on Webb Tract; and construction of a 2.2-acre island in the San Joaquin River for the Sherman Island Berm Demonstration Project.

Levee Upgrades

The Department funds upgrades to 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 a 16-foot crown width, with a waterside slope ratio of at least 3 horizontal to 1 vertical.

In August 1991, the Corps, USBR, and the Department signed a feasibility cost-sharing agreement for a special study of the Sacramento-San Joaquin Delta. Updating an earlier 1982 study, the 1991 special study provides for investigating solutions for Delta flood protection, salinity intrusion, recreation, and navigation. In accordance with the Water Resources Development Act of 1986 and the federal policy of incurring no net loss of habitat, the 1991 study includes environmental and wildlife habitat restoration measures. The study will also consider the Department's management plans for water supply and flood control when developing alternatives for a comprehensive Delta plan.

U.S. Army Corps of Engineers

In addition to its historical leadership in flood control, the U.S. Army Corps of Engineers 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]) and any activity which results in discharges of dredged or fill material into waters of the United States (which includes wetlands), according to Section 404 of the Clean Water Act.

U.S. Bureau of Reclamation

The U.S. Bureau of Reclamation manages the operation of the Central Valley Project and shares with the Department responsibilities for meeting water quality and flow objectives in the Delta. The CVP delivers about 7 million acre-feet of water a year to contractors in the Sacramento and San Joaquin valleys and parts of the San Francisco Bay Area. Under the requirements of the CVP Improvement Act, USBR also supplies water for fisheries and wildlife refuges in the Central Valley.

Because the Department and USBR share Delta responsibilities, the Department coordinates SWP operations with USBR according to terms and conditions of the Coordinated Operation Agreement, signed in 1986. That agreement replaced an earlier system of year-to-year agreements regarding the responsibilities of the Department and USBR in the Delta. The COA is significant in that the federal government agreed to accept a significant portion of responsibility for meeting the State Water Resources Control Board’s water quality requirements for the Delta, with certain restrictions as to limitations of State and federal authorities.

The special study is divided into two phases. Phase I began in September 1991 and ended in March 1993. The Phase I report, called the *Initial Report*, describes problems, possible solutions, and

opportunities to improve and/or provide flood protection, fish and wildlife habitat, water quality, recreation, and navigation. The *Initial Report* included a plan that identified existing and future land uses in years 2000, 2020, and 2040. The report discussed developing a comprehensive plan, primarily for flood control, navigation, and environmental restoration.

In Phase II, a Regional Planning Report for environmental restoration, flood control, and navigation is being developed. The goal of this report is to develop a region-wide plan for Corps involvement in the Delta that links to the other planning efforts. The Regional Planning Report will incorporate and be closely coordinated with CALFED long-term policies and plans. Other Phase II efforts are to:

- design and construct a levee test section;
- study borrow material sources; and
- study dredged material reuse.

In addition, a planned joint program will investigate other reuse opportunities and technical studies of sediment traps, water-quality effects of sediment reuse, subsidence control, and habitat restoration. These investigations will demonstrate the value of sediment reuse and will continue to build momentum for developing solutions to Delta problems, particularly for flood-control issues.

Delta Water-Rights Management

Several agencies in the western Delta have rights to water in the Delta. To manage those water rights and resolve issues associated with them, the Department negotiated water-rights management contracts with some of the agencies concerned. Those agencies serve agricultural, municipal, and industrial users of Delta water.

Delta Agricultural Water Users

In 1974, the Delta Water Agency was replaced by six Delta agricultural water agencies—North Delta Water Agency, SDWA, Central Delta Water Agency, East Contra Costa Irrigation District, Contra Costa County Water Agency, and Byron-Bethany Irrigation District. Two of those agencies—NDWA and ECCID—signed water-rights management contracts with the Department in 1981. The Department also negotiated contracts, or is requesting negotiations, with other agencies to provide for water level, circulation, and quality needs in certain areas.

South Delta Water Agency Contract

In September 1990, the Department completed negotiations for a long-term agreement with SDWA and USBR. Under the proposed SDWA contract, the parties agreed to proceed with the design, construction, and operation of certain barrier facilities in the channels of the south Delta. The facilities resolved those portions of the lawsuit that SDWA filed in 1982 regarding the alleged effects of export pumping by the SWP and/or the CVP on water levels, quality, and circulation in the south Delta.

Since 1990, the Department has installed and operated temporary barrier facilities in the south Delta to improve south Delta conditions and collect data needed to design and operate permanent barrier facilities as proposed in the ISDP. Data collected in the Temporary Barriers Program assessed the barriers' ability to reduce or eliminate adverse water levels and improve local hydraulic circulation patterns.

Western Delta Municipal Water Users

To compensate the Contra Costa Water District and the City of Antioch for purchasing water of usable quality when such water is not available from Mallard Slough and the San Joaquin River, respectively, the Department signed contracts with those agencies in 1967 (CCWD) and 1968 (City of Antioch).

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 water supplies of usable quality lost because of SWP operations. Credits for the number of days of above-average water supplies of usable quality from Mallard Slough and the San Joaquin River accrue to offset the number of below-average days in future years.

Information in this chapter was contributed by the Division of Planning and Local Assistance, the Central District, and the Office of State Water Project Planning.

Chapter 3
Environmental Programs

Delta Cross Channel

Significant Events

- Delta inflow was high while State Water Project export pumping was relatively low during spring, early summer, and fall 1998 due to high rainfall in the Central Valley. The high inflow and low pumping were sufficient to protect fishery resources, alleviating the need for any additional adjustments in SWP operations.

- National Marine Fisheries Service listed the steelhead as threatened under the Federal Endangered Species Act. The California Fish and Game Commission listed the spring-run chinook salmon as threatened under the California Endangered Species Act. NMFS also adopted late-fall, spring, and fall-run chinook salmon as candidate species for listing as threatened or endangered under FESA. The U.S. Fish and Wildlife Service deferred its decision to list the Sacramento splittail as a threatened species under FESA.

- The California Department of Fish and Game and the Department of Water Resources approved and began implementing six fishery-improvement projects to offset fish losses at Banks Pumping Plant.

- The Vernalis Adaptive Management Plan, a 12-year federal/State research component associated with the San Joaquin River Agreement, directed intensive fisheries sampling in the lower San Joaquin River. From April 15 to May 31, a series of fisheries studies assessed salmon smolt survival under high flow/low export conditions. In June 1998, the Department signed a Statement of Support encouraging SWRCB to implement VAMP. The draft EIS/EIR on meeting flow objectives for the San Joaquin River Agreement was released in September 1998.

The Department of Water Resources has developed and put into action several programs to avoid, minimize, or offset adverse impacts that might result from construction and operation of State Water Project facilities.

Operations for Fish Species of Concern

Avoiding and minimizing adverse impacts to fish species of concern is a primary consideration in operation of the SWP. A species of concern is one that has been listed or proposed for listing as threatened or endangered by a State or federal fishery agency. Maintaining flexibility in operations is key to avoiding and minimizing impacts to fishes of concern. Operational responses can include curtailing exports, changing delivery schedules, increasing reservoir releases, preferential use of certain facilities, or a combination of these actions.

San Joaquin River Spring Pulse Flow

In recent years, the Department coordinated with the U.S. Bureau of Reclamation to decrease Delta exports and increase flows in the San Joaquin River from April 15 through May 15, to benefit fall-run chinook salmon emigrating from the San Joaquin River basin. Spring runoff from storms and snowmelt in the Central Valley made this unnecessary in 1998. Pumping early in the season filled SWP storage reservoirs south of the Delta, reducing the need to pump in the spring. High rainfall and flood releases from upstream reservoirs also reduced south-of-the-Delta water demands and the need for USBR to augment San Joaquin River flow.

Delta Export Curtailments Due to Delta Smelt

The biological opinion on the effects of SWP/Central Valley Project operations on Delta smelt uses the combined (SWP and CVP) Delta smelt salvage as thresholds to reinitiate consultation between USFWS, USBR, DFG, and the Department. If needed, further actions are taken to reduce water project impacts on Delta smelt. These thresholds include:

- the 14-day running average of combined SWP and CVP Delta smelt salvage, commonly referred to as the “yellow-light level”; and
- the cumulative total of combined salvage for each month, commonly referred to as the “red-light level.”

Reaching the yellow light triggers informal consultation to consider options for reducing Delta smelt take. Reaching the red light triggers formal reconsultation among the agencies to determine whether additional actions are necessary to avoid jeopardizing the species.

The red-light level is based on historic salvage data and varies among the months of the year and water-year types. For example, in an above-normal water year like 1997, the red-light level ranges from 733 fish in December to 11,990 fish in October. Monthly red-light levels for below-normal water years are generally higher—as much as six times higher—than levels for above-normal water years.

In 1998, the distribution and salvage levels of Delta smelt never reached a point that required curtailment of SWP exports. Delta inflow and outflow were high and exports were low throughout the spring and early summer, contributing to movement of young smelt away from the export facilities and into the western Delta and Suisun Bay.

Figure 3-1 shows the abundance index for Delta smelt from 1967 through 1998, based on fall midwater trawl sampling. The fall abundance index is important because it provides the best estimate of

the adult Delta smelt population. The index for 1998 was up from 1997, ending the odd-year high abundance, even-year low abundance phenomenon observed since 1991. Scientists do not know what causes variations in abundance among years.

Spring-Run Chinook Salmon Response Plan

In June 1997, the California Fish and Game Commission adopted a Special Order instructing DFG to assess the range of possible flow and export conditions that yearling and smolt spring-run salmon may encounter within the Delta. If operational changes are deemed necessary, then DFG was instructed to develop and present a plan to the CALFED Operations Group recommending target levels of protection and measures to achieve that protection. The resulting plan targeted late-fall SWP and CVP operations and outlined a monitoring program, identified indicators that would trigger a response, and identified possible actions to minimize SWP and CVP impacts on spring-run salmon. This plan was modified to improve protection of the species.

Flow, turbidity, and fish movement or presence were all continuously monitored by using in-stream measurements, surveys, and fish screw traps. The indicators included an increase in flows or turbidity in the Sacramento River and its tributaries, fish migration towards the Delta, and the detection of spring-run salmon at the export facilities. Possible actions included the closure of the Delta Cross Channel gates, cessation of outflow modifications (a return to the 4,500 cfs average north Delta outflow index for the remaining period), and other operational adjustments as needed.

Implementation of the plan started in November 1998 and is expected to continue through January 1999. The Cross Channel gates were closed in early September for flood control due to high flows in the Sacramento River. Although flows dropped, the gates remained closed through the remainder of the year because (1) there were no water quality problems in the Delta and (2) fish sampling found several winter-run-sized salmon young in the north Delta.

Fisheries Restoration

In 1998, the Department cooperated with the U.S. Department of the Interior to carry out the intent of the 1992 Central Valley Project Improvement Act's Restoration Plan for the Anadromous Fish Restoration Program in the Delta. The program develops and implements reasonable efforts to at least double natural production of anadromous fish migrating through the Delta. These include both native anadromous fishes (i.e., chinook salmon, steelhead, white sturgeon, and green sturgeon) and nonnative fish (American shad and striped bass). Efforts in the Delta include adjusting Delta Cross Channel gates'operation and extensive real-time fisheries monitoring. CVPIA impacts SWP operations through its directive to the CVP to comply with State water law and Coordinated Operating Agreements in any CVPIA action. The State shares some costs for environmental mitigation under CVPIA. Anadromous Fish Restoration Program activities also incorporate the work of the CALFED process and the restoration actions already supported by stakeholders in the Bay-Delta process. The Delta smelt biological opinion (1-year and long-term) incorporated specific operational measures consistent with CVPIA that benefit Delta smelt while providing concurrent benefits to anadromous and resident fisheries.

The Vernalis Adaptive Management Plan, a 12-year research component associated with the San Joaquin River Agreement, directed intensive fisheries sampling in the lower San Joaquin River. From April 15 to May 31, 1998, a series of fisheries studies assessed salmon smolt survival under high flow/low export conditions. Varied export pumping rates were coordinated with fisheries collection efforts under VAMP through the end of May. The San Joaquin River Agreement attempts to satisfy the goals of the Bay-Delta Accord to improve fisheries conditions while balancing the protection of long-held water rights on the San Joaquin River and its tributaries. The agreement settles legal challenges to the 1995 Bay-Delta Accord by water rights holders. In June 1998, the Department signed a Statement of Support encouraging SWRCB to implement VAMP. Public hearings on its implementation are expected to continue into 1999.

Petitions to List Additional Fish Species

Federal and State fish and wildlife agencies listed two fish species as threatened and considered listing two others as threatened or endangered. Listing increases the likelihood that these species will impact State and federal water project operations.

NMFS listed Central Valley steelhead trout as threatened under FESA in March 1998, but deferred its decision to adopt a 4(d) rule until 1999. The 4(d) rule defines if and when NMFS needs to authorize the incidental take of the fish.

The California Fish and Game Commission listed spring-run chinook salmon as threatened under CESA in August 1998.

NMFS also adopted late-fall, spring, and fall-run chinook salmon as candidate species for listing as threatened or endangered under FESA. NMFS could not detect enough differences between the fall and late-fall run to consider them as distinct evolutionarily significant units under ESA. Therefore, the two runs are being considered as one subspecies for listing consideration. NMFS held public hearings during the summer to solicit comments on the proposed listing. A decision on whether to list the two species is scheduled for early 1999.

The USFWS decision to list splittail as threatened was postponed again. This species has been considered for listing since 1994. USFWS reopened the comment period in 1998 to receive the most recent information on the status of the species.

The Department and USBR consulted with NMFS and DFG about the potential impacts of SWP and CVP operations on the newly listed steelhead and spring-run chinook salmon. A biological opinion and take authorization for these species is expected in 1999. The Department and USBR also modified the 1997 Spring-Run Chinook Salmon Response Plan to provide greater and more immediate protection for the species in fall 1998.

Fish Population Estimates

Figure 3-2 shows estimates of returning adult winter-run chinook salmon from 1967 through 1998. The estimated escapement for 1998 was 2,610, which more than replaced the estimated 1,361 adults in the parent stock of 1995. This is a very positive sign for winter-run salmon, as it demonstrates the reproductive population is increasing. Factors such as improved spawning and rearing habitat, reduced losses in the Delta, reduced commercial fishing losses, and ocean conditions are all thought to have benefited winter-run salmon.

Figure 3-3 shows the fall midwater trawl index for young-of-the-year Sacramento splittail for the period 1976 through 1998. The 1998 index, the highest on record, was probably the result of the ample seasonally flooded habitat (i.e., Sutter and Yolo bypasses) created by the volume of high winter and spring runoff.

Feather River Fish Studies

Joint Department and DFG salmon studies continued in 1998 on the lower Feather River and at the Feather River Hatchery. These studies will help support the Department in the upcoming process to renew the Federal Energy Regulatory Commission license for the Oroville facilities.

Studies in 1998 focused on documenting the number and distribution of in-channel adult fall-run salmon. As in previous years, the number and distribution of adult fall-run salmon suggest that superimposition of spawning adults is a major problem in the river, particularly in the low-flow channel. Superimposition occurs when salmon repeatedly spawn in the same location, digging up previously deposited eggs and smothering other nests, resulting in decreased egg survival. This type of excessively localized spawning activity appears to be related to both salmon density and flow distribution. It appears that more flow from the low-flow channel may attract more salmon to the upper reach of the river, exacerbating the problem. This effect may cancel benefits from the increased spawning areas available at higher flows. A yearly trend toward higher densities of salmon spawning immediately downstream of Feather River Fish

Hatchery suggests hatchery operations may also play a role in spawning superimposition. This hypothesis will be further investigated in coming years, using results from a tagging program at the hatchery.

Mitigation Projects

In 1986, the Department and DFG signed the Four Pumps Agreement to annually provide funds to replace fish lost at the intake facilities. It also provides $15 million for additional projects to compensate for losses prior to 1986. Although the agreement focuses on chinook salmon, striped bass, and steelhead, it also considers other fish.

Since 1986, the Department has spent $24 million on mitigation projects developed under this agreement. These projects include improving salmon spawning and rearing habitat, planting hatchery- and net-pen-reared striped bass, implementing a conjunctive-use project to improve salmon and steelhead migration flows in Mill Creek in Tehama County, constructing fish ladders and screens on Butte Creek and fish screens in Suisun Marsh, and enhancing enforcement of fish and game laws in the Delta and upstream to benefit salmon, steelhead, and striped bass and provide increased protection for spring-run salmon.

In 1996, DFG and the Department amended the agreement to:

- provide an additional 5 years to spend the remaining $9 million of the $15 million lump sum provided in the agreement; and
- specify the likely allocation of the remaining funds.

Because of difficulties in developing mitigation projects, the Department could not spend the full $15 million in the 10 years required by the original agreement. The remaining funds were tentatively allocated to provide:

- $2 million for screening diversions in Suisun Marsh;
- $1 million for predator-isolation projects on San Joaquin River tributaries;
- $2 million for a conjunctive-use project to improve spring-run salmon migration in Deer Creek in Tehama County; and
- $4 million for a salmon conservation hatchery on the Tuolumne River.

Other mitigation projects approved in 1998 for implementation from the agreement's annual and $15 million funds include:

- a 3-year extension of enhanced law enforcement in the Delta and upstream to benefit salmon, steelhead, and striped bass;
- reducing juvenile salmon stranding in the lower Feather River (pilot project);
- stocking 235,000 yearling striped bass;
- planning and constructing a salmon habitat project on the Merced River to improve salmon survival by eliminating predator habitat from rearing areas and migration pathways and by improving salmon-spawning habitat;
- planning for additional salmon hatchery production to provide fish to supplement natural salmon production or provide subjects for fish studies in the San Joaquin Basin; and
- operating a pen to acclimate hatchery-reared salmon during their release into San Pablo Bay to improve their survival.

Information in this chapter was contributed by the Environmental Services Office and the Division of Operations and Maintenance.

Figure 3-1
Delta Smelt Fall Midwater Trawl Abundance Indexes, 1967 through 1998

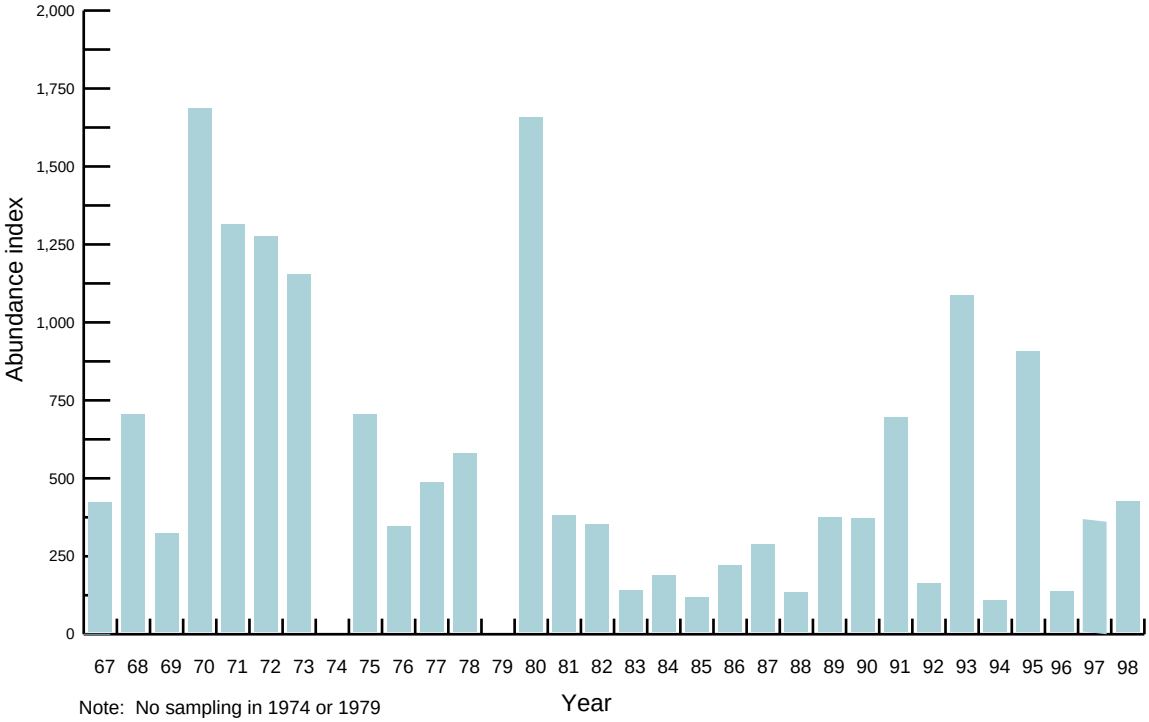


Figure 3-2
Estimated Total Winter-Run Chinook Salmon Escapement, 1967 through 1998

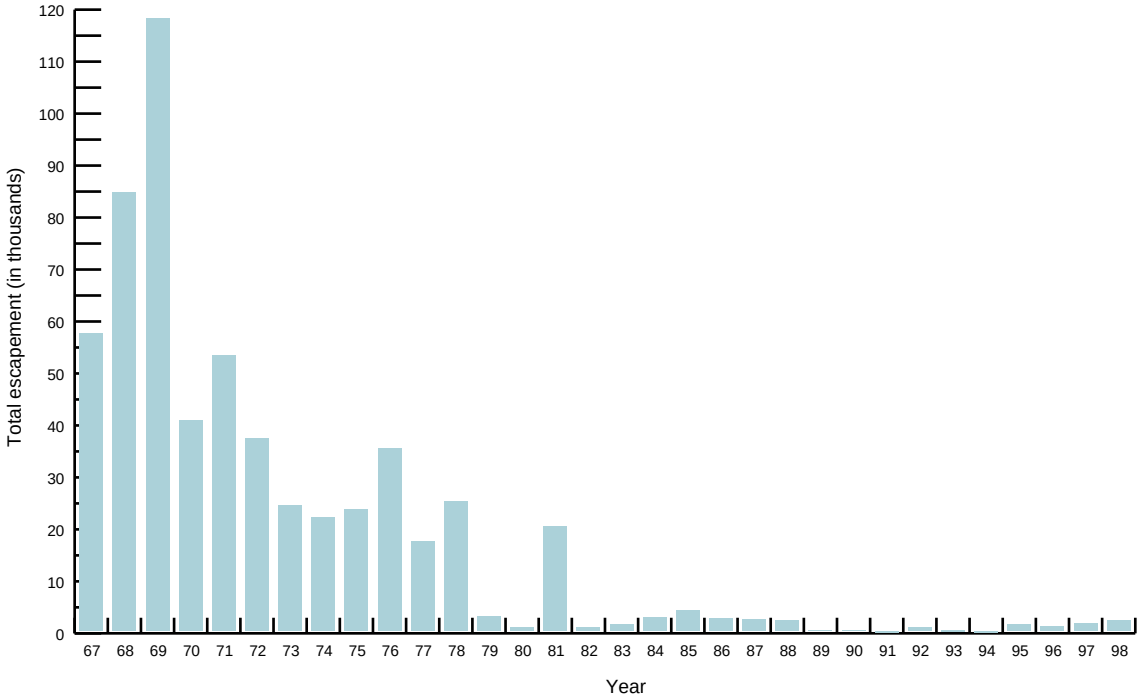
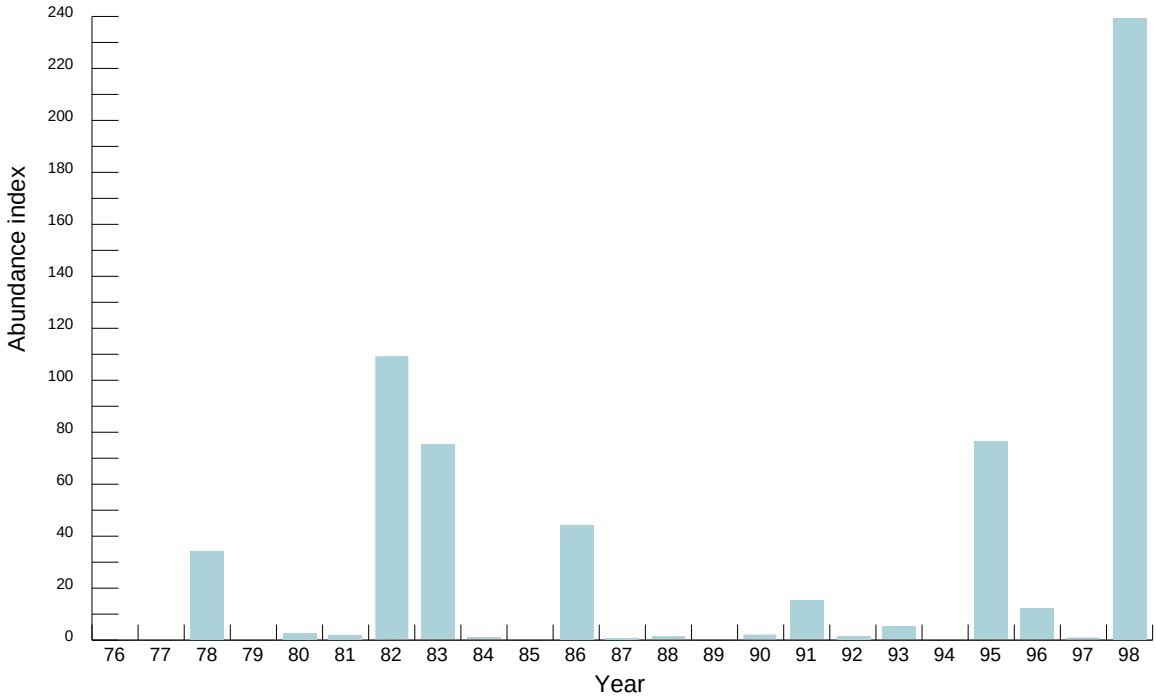
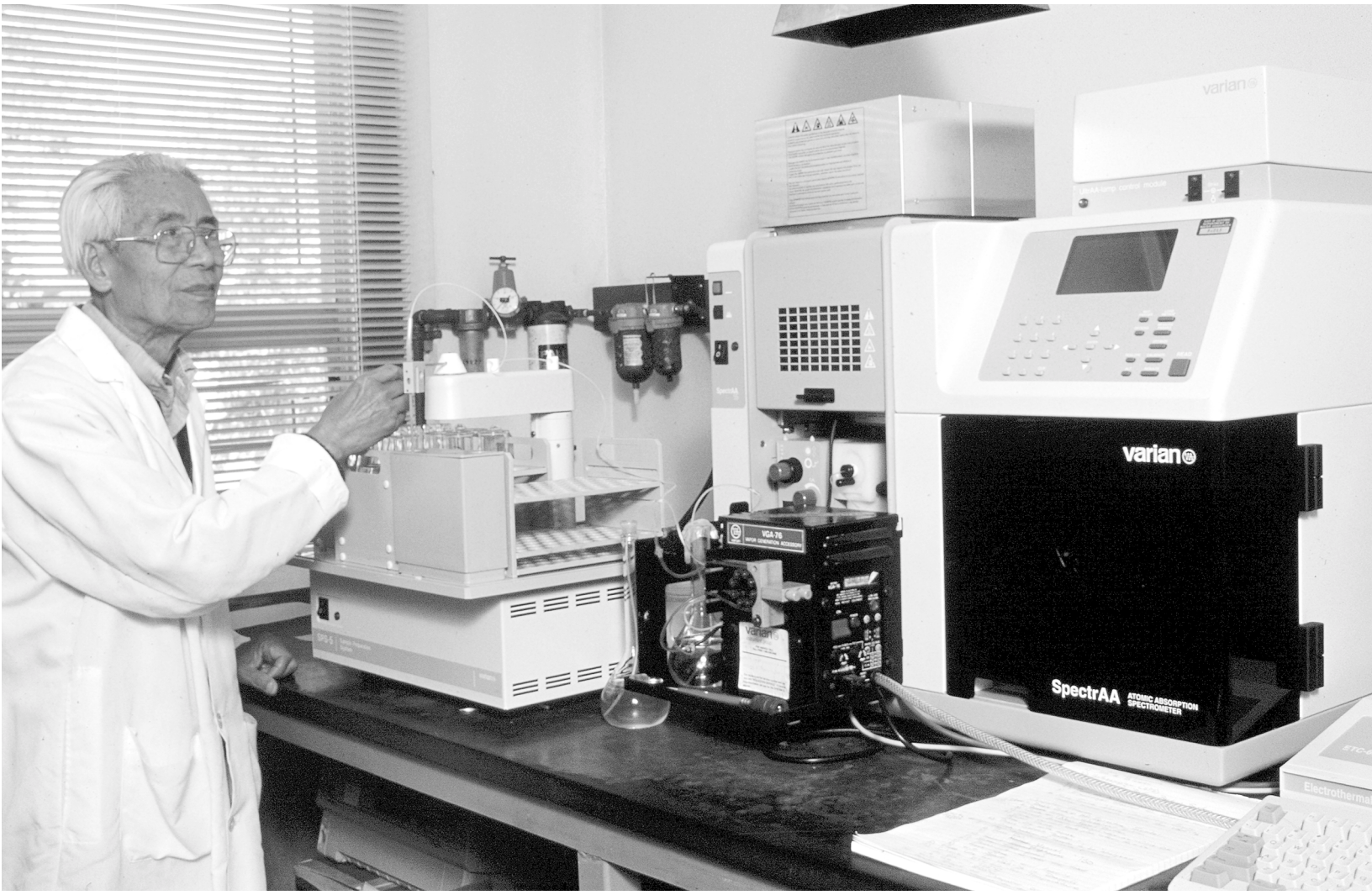


Figure 3-3
Young-of-the-Year Splittail Abundance Index, Fall Midwater Trawl, 1976 through 1998



Note: No sampling in 1979. Insufficient data in 1985, 1989, and 1994.

Chapter 4
Water Quality Programs



Anthony Lee, retired annuitant, conducting tests at Bryte Chemical Laboratory

Significant Events

- On December 3, 1998, the State Water Resources Control Board adopted Water Right Order 98-9. The order is an interim order that continues, as modified, the temporary terms and conditions set forth in WR 95-6. On September 17, 1998, SWRCB adopted WR 98-6, which authorized the Department and U.S. Bureau of Reclamation to vary flows for meeting certain Suisun Marsh salinity standards and waive standards during salmon passage experiments (October 1998 to May 2001).

Many Californians rely on the State Water Project for part or all of their daily water needs. Water for agriculture, industry, power generation, recreation, and fish and wildlife needs also comes from the SWP. The Department monitors SWP water quality throughout the system, using an automated network of continually operating recorders and laboratory analyses of field samples collected weekly, monthly, quarterly, or annually.

Delta Activities

The SWRCB sets water quality objectives for beneficial water uses. The Department of Health Services establishes maximum contaminant levels for treated drinking water. Additional contractual water quality objectives at points of delivery are set by Article 19 of the long-term SWP water supply contracts. Water quality in the Delta and Suisun Marsh is protected under SWRCB Decision 1485, as amended by 95-6, to be consistent with the Principles for Agreement on Bay-Delta Standards, December 15, 1994 (Bay-Delta Accord).

The Bay-Delta Accord, formulated by CALFED and representatives of several urban, agricultural, and environmental water interests, was intended to be in effect for 3 years. The accord established new outflow standards, modified the criteria for implementation of the California Endangered Species Act to increase water project operations flexibility, and contained a funding mechanism for nonflow-related measures (Category III).

SWRCB adopted a water quality control plan for the Bay-Delta (1995 Bay-Delta Plan) in May 1995, incorporating the agreements reached in the accord. In June 1995, SWRCB adopted WR 95-6, an interim order amending the terms and conditions of SWRCB's D-1485 and the SWP and Central Valley Project water rights permits to be consistent with the Bay-Delta Accord. WR 95-6 gave the SWP and CVP the right to jointly use each other’s point of diversion in the south Delta (Banks and Tracy pumping plants) to avoid causing significant adverse effects on the environment. Under a separate petition approved by SWRCB, the CVP Tracy Pumping Plant exported SWP water from March through May 15, 1998, when

State Water Resources Control Board

The State Water Resources Control Board, established by the California Legislature in 1967, oversees water rights and water quality for California. Among its many responsibilities, SWRCB 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 control plans, regulations, and policies; and sets water quality standards for the Delta.

To implement its mandate to set Delta water quality standards, SWRCB issued Water Right Decision 1485: Sacramento-San Joaquin Delta and Suisun Marsh in 1978. That decision focused on SWP and CVP water right permits and operations, requiring the SWP and CVP to maintain Delta water quality as it would have existed without the projects. However, after Decision 1485 was adopted, various water users as well as the federal government challenged it in court. Since then, SWRCB updated its Water Quality Control Plan. It was adopted on May 22, 1995. Water Right Order 95-6 amended D-1485 to be consistent with the plan on June 8, 1995. Water Right Order 95-6 modifies the standards for Suisun Marsh and allows the CVP and SWP to use either project’s Delta pumping plant to pump project water to increase fish protection and maintain project delivery capability.

forebay repairs curtailed exports from Banks Pumping Plant.

In December 1997, CALFED extended the Bay-Delta Accord for 1 year. On December 3, 1998, SWRCB adopted WR 98-9. The order is an interim order that continues the modified temporary terms and conditions set forth in WR 95-6. The order will expire upon either adoption by SWRCB of a comprehensive water rights decision that allocates final responsibilities for meeting the 1995 Bay-Delta objectives or on December 31, 1999, whichever comes first. SWRCB held several public water rights hearings during 1998 as part of its comprehensive Bay-Delta water rights process to consider alternatives to implement the 1995 water plan and consider impacts of and responsibility for meeting the objectives.

WR 98-9 increased the time allowed for payback pumping through the joint point of diversion permit from 6 months (specified in WR 95-6) to 1 year. WR 98-9 also required that the Department and USBR consult with the South Delta Water Agency, submit a response plan, and receive SWRCB's permission prior to joint point pumping. The response plan specifies departmental and USBR actions to ensure adequate southern Delta channel water levels for agricultural diversion. The order also directed both agencies to conduct studies to develop a better understanding of the effect of make-up pumping on central and south Delta water channels.

WR 95-6 established the Suisun Ecological Workgroup and set August 1997 as the date for a final report on the impact of new 1995 Bay-Delta Plan Suisun Marsh standards. SEW submitted an interim report in September 1997. SWRCB issued WR 98-9, extending the final reporting date to June 1, 1999. On September 17, 1998, SWRCB adopted WR 98-6, which authorized the Department and USBR to vary flows to meet certain Suisun Marsh salinity standards and waive standards during salmon passage experiments (October 1998 to May 2001).

The Bay-Delta Accord specifies that compliance with the incidental take provision of the Federal Endangered Species Act was not intended to result in any additional water costs to CVP and SWP water supply. Thus, the accord allows for some operational flexibility through the deliberations of the CALFED Operations Group. Both the CVP and SWP operate in accordance with biological opinions regarding Delta smelt and winter-run chinook salmon. These two opinions were revised March 6, 1995, and May 17, 1995, respectively, to conform with the accord.

The Department conducts extensive monitoring to protect beneficial uses of water in the Delta and Suisun Marsh as required by SWRCB's D-1485, amended by WR 95-6. Figure 4-1 shows water quality monitoring sites throughout the Sacramento-San Joaquin Delta.

Water Supply Conditions

Water Year Classifications and Water Supply Indexes

The 1997-98 water year was classified as "wet" for most of California. It continued a 4-year trend of above-average or wet water years. Although December 1997 was very dry, storms in January and February 1998 produced twice the amount of normal monthly rain.

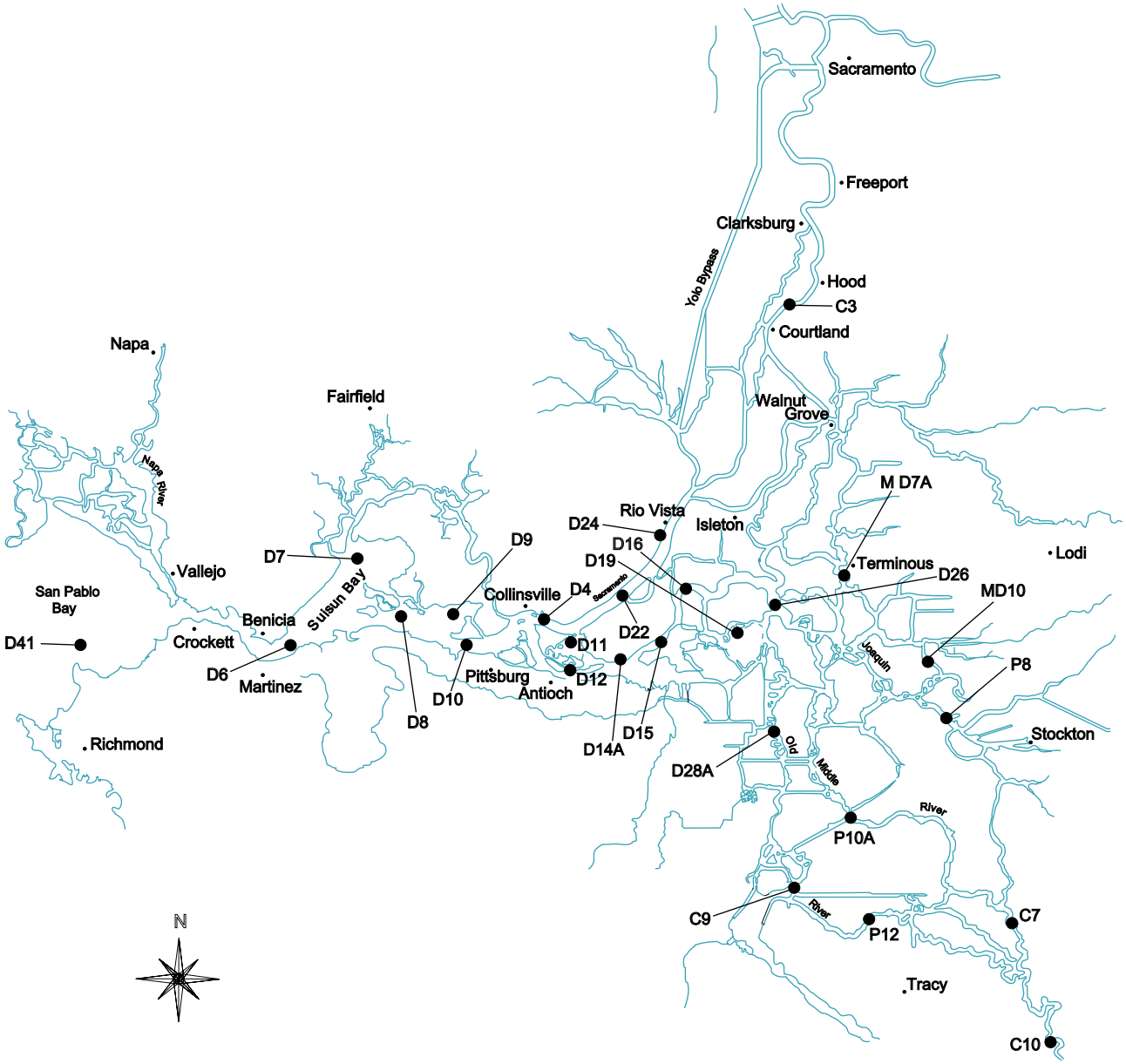
October started the water year with near-normal precipitation, while November was above average. After a slow start in December, the winter turned wet. However, the February storms were relatively cool, which helped build up a large snowpack in the mountains. With the exception of 1995, 1998 had the heaviest snowpack since 1983, another strong El Niño year.

March and April had above-average precipitation, but were not nearly as wet as February. May was cool and wet, more typical of March weather. June started out cool and wet, but after mid-month the weather turned dry for the remainder of the summer until September, which saw near-normal showers in the mountains.

Figure 4-1
Water Quality Monitoring Sites in the Sacramento-San Joaquin Delta

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



SWRCB's 1995 Bay-Delta Plan contains objectives conditioned by water-year type, which, in general, become less stringent in more critically dry years. The water year classification system provides relative estimates of a basin's available water supply from the amounts of rainfall, snowmelt runoff, and groundwater accretion rates. Water-year types can be classified as wet, above-normal, normal, dry, and critical.

The Bay-Delta Plan applies a water-supply forecast tool, called the Sacramento River Hydrologic Region 40-30-30 Water Supply Index, to replace the Sacramento River Index. SWRCB first introduced the 40-30-30 Water Supply Index in its 1991 Water Quality Control Plan for Salinity. The Bay-Delta Plan proposes to further refine the 40-30-30 Water Supply Index by eliminating the subnormal snowmelt and "year-following-dry or critical year" provisions found in D-1485.

The Sacramento Valley Unimpaired Runoff lists the major flows into the Sacramento Basin. The varying factors used in the 40-30-30 Index are percentages of the following: the contribution of the current year's April to July SVUR (40 percent), projected current October through March SVUR (30 percent), and the previous year's 40-30-30 Index (30 percent, with a 10-million-acre-feet capacity limit).

The 1995 Bay-Delta Plan also includes a San Joaquin River Basin 60-20-20 Index, which uses methods similar to the Sacramento River 40-30-30 Index. The sum of both indexes—the Eight River Index—determines the duration of the fish and wildlife salinity/flow standard at Chipps Island or Port Chicago during February through June.

The April to July SVUR forecast for May 1, 1998, was 10.06 million acre-feet, 153 percent of average. The resulting 40-30-30 Index was 12.4 million acre-feet, or 13 percent increase over the 40-30-30 Index of 11 million acre-feet in 1996-97. The water year was classified as "wet" for all beneficial uses. The San Joaquin 60-20-20 Index was also classified as "wet" for 1998, with 5.1 million acre-feet. The Eight River Index was forecast as 16.17 million acre-feet for April to July.

Operations under the Bay-Delta Accord, Amended D-1485, and the Winter-Run and Delta Smelt Biological Opinions

The Department and USBR continued to operate the projects in accordance with the 1994 Bay-Delta Accord and 1995 Bay-Delta Plan and WR 95-6, which brought D-1485 and D-1422 into conformance with the accord. The accord established water quality, flow, and operational criteria for the estuary. Operations of the CVP and SWP were to be guided by the CALFED Operations Group through coordination with CVPIA and CESA requirements. The CALFED Ops Group, formed in 1994 by the Framework Agreement between the Governor's Water Policy Council of the State of California and the Federal Ecosystem Directorate, consists of representatives from seven State and federal agencies. The agreement also expands real-time monitoring of fish movement and conditions in the estuary to aid daily water management. The purpose of real-time monitoring is to provide more timely protection of targeted fish species from entrainment at the Delta facilities of the SWP and CVP and ensure water supply reliability. See Chapter 3 for a discussion of other environmental issues.

Water Quality Standards

Water quality standards and objectives are categorized by the beneficial uses they are intended to protect. They include municipal and industrial standards, agricultural standards, and fish and wildlife standards. The Department attempts to meet Bay-Delta Plan objectives and amended D-1485 water quality and flow standards through releases from upstream reservoirs and Delta export operations. However, the 1995 Bay-Delta Plan also addresses San Joaquin River water quality by incorporating the D-1422 Vernalis salinity standard. San Joaquin River flows are not influenced by the SWP's upstream reservoirs, but they may be influenced by SWP exports and placement of south Delta barriers.

During 1998, the Delta Cross Channel gates were open only 53 days. The Cross Channel gates close during January whenever Delta outflow is greater

than 12,000 cfs—and any time Sacramento River flow at Freeport exceeds approximately 25,000 cfs—to reduce flooding potential on the Mokelumne River and to prevent scour on the downstream side of the gate structure. SWRCB's 1995 Bay-Delta Plan contains measures that require closure of the Delta Cross Channel gates from February 1 until May 20, during peak migration of winter and fall-run chinook salmon smolts and steelhead, and spawning season for Delta smelt, longfin smelt, Sacramento splittail, and striped bass.

The gates remained closed, with Freeport flows exceeding 25,000 cfs, for most of January through mid-July 1998. The gates opened for an uninterrupted period of 53 days from July 17 to September 7, under lower Sacramento River flow rates of around 15,000 cfs. The gates closed again on September 8, 1998, as flows rose above 20,000 cfs; they remained closed for the rest of 1998 due to continuing high river flows and fall fisheries concerns.

Specific water quality requirements are set to benefit municipal uses, agriculture, and fish and wildlife. High river outflows, export restrictions, and water releases to benefit migrating fish (both pulse and attraction flows) helped maintain most electrical conductivity values well below objectives. The wet-year municipal and industrial water quality standard for chloride at the Contra Costa Canal Intake near Rock Slough (240 days < 150 mg/L) was met during 1998. An additional standard for maximum chloride levels of 250 mg/L at the Contra Costa Canal, Tracy Pumping Plant, Clifton Court Forebay, and Barker Slough was also met.

Agricultural objectives in 1998 included an EC standard of 0.45 mS/cm (14-day running average) during the irrigation season from April to mid-August, set at Emmaton, Jersey Point, Terminous, and San Andreas in the western and central Delta. Additional salinity standards were applied year-round in the southern Delta on the San Joaquin River, Old River, and at Tracy and Clifton Court Forebay (30-day running average). All agricultural standards were met.

Estuarine Habitat Protection Standard

The estuarine habitat protection standard incorporates modified X2 criteria (geographic isohaline), first established in the 1994 Delta smelt biological opinion. The upstream movement of a 2 ppt isohaline (2 parts per thousand of salt in the water), measured as 2.64 mS/cm at the surface, is maintained within a certain range of positions in the estuary by adequate outflow. These positions (Chipps Island or Port Chicago from February through June) are associated with fish and biota abundance.

The number of days per month when the daily averaged EC maximum (2.64 mS/cm) is in effect at Chipps Island or at Port Chicago is conditioned by the previous month's Eight River Index. This may alternately be met with a maximum 14-day running average EC of 2.64 mS/cm or with specific Delta outflow, set at a 3-day average of 11,400 cfs or 29,000 cfs, when the X2 position is at Chipps Island or Port Chicago, respectively. The Port Chicago standard becomes effective when the Port Chicago 14-day EC average immediately prior to the first day of the month is less than or equal to 2.64 mS/cm. However, the February Port Chicago objective is only in effect when the January Eight River Index is greater than 1 million acre-feet. During 1998, the Eight River Index for January through May was 5.21 million acre-feet, 7.45 million acre-feet, 5.11 million acre-feet, 4.53 million acre-feet, and 5.54 million acre-feet, respectively. Each 14-day average EC preceding month's start was less than 0.4 mS/cm, and the Port Chicago objective prevailed.

From February through June, a wet-year habitat protection flow, measured as Net Delta Outflow, is set at 7,100 cfs, calculated as a 3-day running average. This standard may be used in lieu of the Collinsville minimum daily average or 14-day running average EC of 2.64 mS/cm. From February 1 through June 30, the 3-day running average of Net Delta Outflow Index never fell below 51,874 cfs and averaged more than 100,000 cfs for the period, meeting both Port Chicago and habitat protection NDOI minimums.

Flow Standards

D-1485 sets year-round minimum fish and wildlife flows to benefit salmon migration measured in the Sacramento River at Rio Vista between 1,000 and 5,000 cfs, using 30-day running averages. The winter-run salmon biological opinion also sets wet-year,

mean monthly flow objectives of 3,000 cfs, 4,000 cfs, and 4,500 cfs for September, October, and November to December, respectively. During these periods, the 7-day running average cannot be more than 1,000 cfs below the monthly average. Rio Vista flow never fell below 10,000 cfs during the entire year.

The Bay-Delta Plan incorporated minimum San Joaquin River base and pulse flows from the winter-run salmon biological opinion. These are measured at Vernalis on the San Joaquin River. Base flows are set at 3,420 cfs from February to April 14 and from May 16 through June 30, if the X2 objective is required to be at the further downstream Port Chicago location. The base-flow objective is relaxed to 2,130 cfs when X2 is not required to be west of Chipps Island. During wet years, the San Joaquin River spring pulse flow for April 15 to May 15 is set at a mean of 8,620 cfs at Vernalis. However, the CALFED Ops group may vary the actual timing and duration of the pulse/attraction flow, based on real-time monitoring data. All Vernalis base flows and pulse flows were met, with all daily flow values greater than 10,000 cfs for the period.

An additional requirement calls for a minimum monthly San Joaquin River flow rate of 1,000 cfs during October, with an additional 28,000 acre-feet pulse/attraction flow to bring San Joaquin River flows to 2,000 cfs. This was met, with an October 1998 monthly flow that averaged 5,715 cfs.

Net Delta Outflow Index

Delta outflow cannot be measured directly due to the tidal influence in the Delta. An approximation of Delta outflow is calculated instead, using measured inflows, exports, and estimated Delta water use. The NDOI, introduced in the 1995 Bay-Delta Plan, guided operations in 1998. It provides a more accurate method for calculating Delta outflow by including inflows of the Yolo Bypass system, the eastside stream system consisting of the Mokelumne, Cosumnes, and Calaveras rivers, the San Joaquin River at Vernalis, and the Sacramento Regional Treatment Plant. The NDOI-calculated flows cannot be directly compared to the Delta Outflow Index used prior to 1995, because the Sacramento River bypass flows, along with several eastside stream flows, were not incorporated into the DOI. The calculation of Delta consumptive use also differs in NDOI.

In 1998, excess outflow conditions, as defined by the Coordinated Operating Agreement, predominated for the entire year. Excess conditions allow greater flexibility in project operations. From January 17 through March 10, the outflow, calculated as NDOI, was sustained at more than 100,000 cfs. This period included a 24-day period with outflow of more than 200,000 cfs and within it, a 5-day period of flow more than 300,000 cfs (February 7 to 10). NDOI rose more than 100,000 cfs again from March 26 to April 10 and briefly in June for 3 days (June 2 to 4).

The 1995 Bay-Delta Plan sets specific minimum monthly NDOI standards between 3,000 and 8,000 cfs for the protection of fish and wildlife during January and from July to December. Monthly NDOI was highest in February at 244,278 cfs. Monthly NDOI remained above 8,000 cfs during all months of 1998, with the lowest monthly mean in October at 12,267 cfs. Additional NDOI minimums are set for the protection of striped bass from May 6 to July, usually between 10,000 cfs and 14,000 cfs. Daily NDOI values never fell below 21,298 cfs and averaged 57,159 cfs for the period. All NDOI standards were met in 1998.

Export Standards

The Bay-Delta Accord conditions SWP and CVP exports, using a ratio of total Delta exports to Delta inflow, and is expressed as a maximum allowable percentage or ratio. The maximum allowable export/inflow ratio or percentage varies by month. In February, it is conditioned by the previous month's Eight River Index. During the San Joaquin River pulse flow for April to May, additional export restrictions may apply. However, WR 95-6 allows the CVP and SWP to export at either project's pumping plants to increase fish protection, with concurrence of the CALFED Ops Group and permission of SWRCB.

The actual export amount is calculated using the 3-day average combined inflow rate for Clifton Court Forebay (excluding Byron-Bethany Irrigation District diversions from Clifton Court Forebay) added to the Tracy Pumping Plant diversion. The export/

inflow ratio limit is reported as either a 3-day or 14-day running average. A 14-day running average of inflows is used unless storage withdrawals from upstream reservoirs are being made for export, in which case, a 3-day average of inflows is used. In all water-year types, the February to June maximum combined export rate is 35 percent of Delta inflow; this may be relaxed in February during drier years to between 35 percent and 45 percent. From July to January, the export/inflow ratio rises to 65 percent.

From January 14 to 26, 1998, SWP exports were held to less than 360 cfs and combined exports to about 3,800 cfs to accommodate a low export fish test at both export facilities. This resulted in a low January export/inflow ratio averaging only 26 percent, well below the 65 percent criteria. During the more restrictive February to June period (35 percent objective), actual export/inflow ratio averaged only 3.1 percent. Exports at Banks Pumping Plant were halted entirely for most of February, March, April, and early May. Much of the slowdown occurred in February, caused by downstream flooding and, late in the month, full reservoir storage at San Luis. In February, part of the South Bay Aqueduct pipeline was shut down following erosion damage from high flows in adjacent creeks. Other curtailments during March, April, and early May were needed on portions of the California Aqueduct to repair damage from earlier floods. In addition, Banks exports were reduced during March to lower the Clifton Court Forebay elevation to accommodate repairs to the Clifton Court Forebay dam and intake gate number 4.

Exports at Banks and Tracy pumping plants are limited under provisions of the Bay-Delta Accord to 1,500 cfs or 100 percent of the San Joaquin River flow at Vernalis during the 30-day April 15 to May 15 pulse flow period, whichever is greater. This export limit can be used in lieu of the 35 percent export/inflow ratio only if it results in more restrictive conditions. From April 15 to May 15, the export/inflow ratio dropped to 2.4 percent, as Banks exports were halted or reduced for downstream repairs. Actual combined CVP/SWP period exports averaged only 1,848 cfs, or 10 percent of the Vernalis flow (19,381 cfs).

From July to December 1998 (65 percent objective), the export/inflow ratio averaged 22 percent, never exceeding 44 percent on a daily basis.

In early March, the Department petitioned SWRCB again to allow a temporary joint point of diversion at the CVP Tracy Pumping Plant through mid-May. From March 24 to April 1, 1998, a total of 14,220 acre-feet was exported for the SWP through Tracy Pumping Plant as a joint point of diversion. An additional 579 acre-feet were exported in December. From December 2 to 16, 1998, a total of 14,190 acre-feet of make-up water was conveyed through Banks Pumping Plant for the CVP.

Temporary Delta Barriers

The Temporary Barriers Project began in 1991, following the 1990 release of the *South Delta Water Management Program Draft Environmental Impact Report/Environmental Impact Statement*. The program was designed to resolve local south Delta water supply issues within the larger context of the Department's water banking program. The barriers improve local water levels and circulation patterns, protect fishery resources, improve agricultural operations, and meet other South Delta Water Management Program objectives. Though originally established as a 5-year project, the project was extended for an additional 5 years in 1995. High San Joaquin River and Delta channel flows throughout most of the year prevented the installation of the barriers during 1998.

Fall Dissolved Oxygen Conditions in the Stockton Ship Channel

Historically, dissolved oxygen levels in the eastern Stockton Ship channel have dropped below 5.0 mg/L during the late summer and early fall of most years because of low stream inflows, warm water temperatures, high biochemical oxygen demand, reduced tidal circulation, and intermittent reverse flow conditions in the San Joaquin River past Stockton. These low dissolved oxygen levels can cause physiological stress to fish and block upstream migration of salmon.

A temporary rock barrier is usually installed at the head of Old River during periods of projected low

outflow in the San Joaquin River to increase net flows down the San Joaquin River past Stockton and help alleviate dissolved oxygen concerns in the eastern channel.

In 1998, average daily flows past Stockton ranged from 1,000 to 2,000 cfs, due to the exceptionally wet winter of 1997-98 and the following cool, wet spring. Because of the high flows and the absence of reverse flow conditions past Stockton, the Old River barrier was not installed in fall 1998.

In spite of the high San Joaquin River inflows into the eastern Stockton Ship Channel, a dissolved oxygen depression (an area where dissolved oxygen levels were 6.0 mg/L or less) occurred in the central channel, from Columbia Cut to Fourteen Mile Slough, in August and early September. This area was west of Rough and Ready Island in the eastern channel, where levels less than 5.0 mg/L have generally occurred.

Relatively warm water temperatures measured within the channel in August and early September (22 to 26 degrees C) contributed to the dissolved oxygen depression in the channel in late summer 1998. However, at the range of water temperature values experienced in late summer 1998, dissolved oxygen levels have been lower (less than 5.0 mg/L) in the eastern channel in previous years.

High San Joaquin River inflows into the eastern channel immediately east of Rough and Ready Island were enough to push the area of depressed dissolved oxygen levels westward from the historic sag area in the eastern channel to the central portion of the channel. Greater tidal fluctuations and water column mixing within the central portion of the channel may have contributed to the improved dissolved oxygen levels.

By September 18, 1998, the late-summer-dissolved oxygen depression in the channel was eliminated. By October 20, 1998, dissolved oxygen levels in the channel rose to more than 8.0 mg/L, due to cooler water temperatures (15 to 18 degrees C in October) and sustained high San Joaquin River inflows into the channel.

Biological Surveys

The Department surveys benthic organism density and diversity along with phytoplankton biomass and community composition in the Sacramento-San Joaquin Delta and Suisun and San Pablo bays (the San Francisco Bay-Delta estuary). These surveys are conducted in response to the mandate of D-1485, as amended by the Water Quality Control Plan adopted in May 1995, and as part of the Interagency Ecological Program.

Benthic Monitoring

The benthic monitoring program is conducted to record abundance and distribution trends in macrobenthic (bottom-dwelling) organism populations and to detect and document the introduction of exotic species into the San Francisco Bay/Sacramento-San Joaquin Delta System. Sampling occurs at ten sites, which represent a wide range of benthic-habitat types in the Delta, Suisun, and San Pablo bays. Four bottom grab samples and one sediment sample are taken monthly at all ten sites. As a result of this environmentally-diverse sampling, six new organisms were added to the species list in 1998. The species are as follows:

- *Musculium* sp., a fingernail clam species, was discovered in the San Joaquin River near Stockton in February.
- Two new tubificid worms. One species, *Specaria josinae*, was found at Clifton Court in May. A second species, *Potamothrix* sp., was discovered at Clifton Court in June and near Rio Vista in November.
- Two crab species. *Eriocheir sinensis*, the Chinese mitten crab, was collected in a grab sample in September in the Sacramento River above Point Sacramento. *Cancer productus*, the red rock crab, was collected in San Pablo Bay in December.
- A chironimid, *Gymnometriocnemus* sp., was collected in December in the Sacramento River below the Rio Vista Bridge.

Overall, 148 species of benthic macrofauna were collected in 1998; seven species represent 53 percent of all organisms collected for this year. These seven species include the amphipods *Ampelisca abdita* and

Corophium stimpsoni; a polychaete worm, *Manayunkia speciosa*; the aquatic oligocheates, *Limnodrilus hoffmeisteri* and *Varichaetadrilus angustipenis*; and the Asian clam species, *Corbicula fluminea* and *Potamocorbula amurensis*. *Ampelisca abdita* and *Limnodrilus hoffmeisteri* were the most abundant species collected, with an average annual total abundance of 2,746 organisms/m^2 and 2,066 organisms/m^2, respectively.

Of these seven dominant species, *Ampelisca abdita* and *Potamocorbula amurensis* represent macrofauna that inhabit a more saline environment. They were found in San Pablo Bay, Carquinez Strait, and Suisun Bay. *Potamocorbula amurensis* was also collected in Grizzly Bay and in the Sacramento River above Point Sacramento. *Corophium stimpsoni* is an estuarine species with a wide distribution within the Bay/Delta system, including the Carquinez Strait, Grizzly Bay, Suisun Bay, the Sacramento River above Point Sacramento and below the Rio Vista Bridge, the San Joaquin River near Twitchell Island and near Buckley Cove, the Old River, and the West Canal leading to the Clifton Court Forebay. The remaining four species are strictly freshwater species and have only been collected at stations east of Suisun Bay. In previous years, *Potamocorbula amurensis* and *Corbicula fluminea* were dominant fauna in both biomass and number collected at study sites. In 1998, however, *P. amurensis* ranked fourth in annual total abundance and *C. fluminea* ranked seventh.

Phytoplankton Monitoring

Average monthly chlorophyll *a* concentrations were generally below 4 µg/L in most regions in 1998. Maximum chlorophyll *a* concentrations in the lower Delta (southern Delta, eastern Delta, and lower San Joaquin River) were below the 20 to 60 µg/L maxima measured in 1997, while concentrations in the downstream region of San Pablo and Suisun bays in the winter were higher than those in 1997. Low chlorophyll concentrations in Suisun Bay were probably a function of grazing by *P. amurensis*, which has depressed chlorophyll biomass in this region since 1987. The low chlorophyll *a* concentrations in the upper Delta (northern Delta, western Delta, and lower Sacramento River) were similar to those of 1997, but in all regions chlorophyll *a* concentrations were lower than those measured before 1980.

In 1998, a chlorophyll *a* maximum occurred in April or May in most regions, followed by a peak in late summer or early fall. In the lower Delta, however, the maximum concentration occurred in August, when water residence times are high in that region.

The percentage of chlorophyll *a* is also examined as an indicator of phytoplankton activity. Percent chlorophyll *a* is the proportion of chlorophyll *a* in total chlorophyll *a* and pheophytin *a*, a breakdown product of chlorophyll *a*. The high chlorophyll *a* concentrations observed in most regions in the spring were accompanied by more than 50 percent chlorophyll *a*, suggesting phytoplankton were growing well throughout the estuary. The 6 ppt salinity station had concentrations less than 50 percent in the fall, but exceeded 50 percent for more months than in 1997.

Cryptomonas spp. and miscellaneous flagellates were common phytoplankton species in the lower and upper Delta, but the chlorophyll *a* maximum was associated with *Cyclotella* spp. in the lower Delta and *Cryptomonas* spp. in the upper Delta. *Cryptomonas* spp., *Skeletonema costatum*, and miscellaneous flagellates were the most common species in the downstream region. *Skeletonema costatum* was the most common species during the April bloom maximum.

Activities Outside the Delta

Activities conducted outside the Delta include scheduled routine SWP water quality monitoring as well as special studies. Most of these special studies are in response to fish and wildlife and water quality issues of importance to agencies that provide domestic water supply. These agencies face increasingly stringent regulations and look to the SWP to deliver high quality raw water.

Water Quality Monitoring

The Division of Operations and Maintenance collects detailed water quality information on the concentration and distribution of chemical, biological, and physical parameters at 33 aqueduct and reservoir sites located throughout SWP facilities. Stations are situated south of the Delta at reservoirs, pumping plants, powerplants, and check structures of the South Bay, Coastal Branch, and California Aqueduct.

Other monitoring activities are conducted on the North Bay Aqueduct, Feather River and at State reservoirs north of the Delta—Lake Oroville, Antelope Lake, Frenchman Lake, and Lake Davis.

The Water Quality Program of the SWP was established in 1968 with completion of the California Aqueduct. More than 60 different chemical constituents are monitored monthly, quarterly, or annually. In addition, automated stations are maintained for continuous monitoring of aqueduct water.

The Department maintains an analytical laboratory, the Bryte Laboratory in West Sacramento, which processes most SWP laboratory water quality assessments. The Department also contracts for some laboratory services. Water samples from 15 SWP stations are analyzed monthly to determine levels of dissolved solids and concentrations of nutrients, chloride, sulfate, sodium, trace metals, and other constituents. Herbicides, pesticides, organic substances, and phytoplankton are monitored less frequently.

Selected SWP water quality data are available electronically through the Department Internet home page (http://wwwomwq.water.ca.gov) and reported monthly in the State Water Project Operations Data Report. Table 4-1 presents laboratory results of sampling at several representative stations during 1998.

Delta exports are normally the primary source of water in SWP facilities and reservoirs south of the Delta. Most Delta water is exported south during the winter and spring when the greatest freshwater outflow occurs; as a result, reservoirs south of the Delta are usually supplied with the highest quality water. San Luis Reservoir, the only SWP conservation storage facility between the Delta and Southern California, is usually filled by May 1.

Municipal Water Quality Investigations Program

The Sacramento-San Joaquin Delta provides drinking water for a large percentage of California's population. Because the Delta is a relatively unprotected watershed, water quality degradation is possible from many sources, including abandoned mines, industrial and municipal waste water discharges, storm water runoff from cities, agricultural discharges, recreational activities, and illegal dumping. The Municipal Water Quality Investigations Program was established to evaluate the suitability of Delta water as a drinking water source, to identify sources of water quality degradation, and to evaluate means of eliminating or preventing degradation of Delta water quality.

Participants in the program include Contra Costa Water District and the municipal water contractors of the SWP. Program advisors include representatives of participating agencies, including the Environmental Protection Agency, California Department of Health Services, and California Urban Water Agencies. Because water quality concerns change rapidly with new drinking water regulations and water quality issues, the MWQI Program must be flexible enough to adapt to changing requirements. The former Delta Health Aspects Monitoring and Delta Island Drainage Investigations programs merged into the MWQI Program in 1990; the program continues to evolve.

The program's initial focus was to compile a comprehensive database on drinking water quality in the Delta. Since then, the program has investigated ways of managing Delta lands and waters to minimize adverse impacts on drinking water quality. The program identified sources of contaminants in the Delta and assessed their significance for drinking water quality and water treatment. Drinking water standards are more difficult to meet when natural organic materials from agricultural drainage are involved.

In addition to monitoring water quality in the Delta, the program now includes studies on source water improvement and management. Several studies developed and tested possible solutions to drinking water problems of the Delta and other watersheds of the SWP.

As required by the Department of Health Services, a 5-year update of the sanitary survey of the SWP resulted in the report, *California State Water Project Sanitary Survey Update Report 1996*. This survey documented water quality conditions and identified potential sources of contamination within the SWP. In addition, the report included recommendations for further investigations and corrective actions. Based

Table 4-1
1998 Water Quality at Selected State Water Project Locations

Constituents	*Units*	*Report Limit < than*	*Thermalito Afterbay Outlet to Feather River mean*	*North Bay Aqueduct Barker Slough Pumping Plant mean*	*Banks Pumping Plant mean*	*Delta-Mendota Canal Upstream McCabe RD mean*	*O'Neill (Check 13) mean*	*Kettleman City (Check 21) mean*	*Highway 119 (Check 29) mean*	*Tehachapi Afterbay (Check 41) mean*	*Devil Canyon near San Bernardino mean*	*Article 19 Objectives Month/10 Year Average or Minimum*
Alkalinity	mg/L	1	34	114	63	64	66	70	61	64	67	-
Arsenic	mg/L	0.001	<0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.05 max
Boron	mg/L	0.1	< 0.1	0.2	0.3 [a]	0.2	0.2	0.2	0.1	0.1	0.1	-
Bromide	mg/L	0.01	0.03 [b]	0.05	0.12	0.11	0.13	0.13 [b]	NR	0.12	0.11	-
Calcium	mg/L	1	7	18	17	19	19	25	16	17	17	-
Carbon-Total Organic	mg/L	0.1	NR	7	4	4 [a]	4	4 [c]	NR	4	3	-
Chlorides	mg/L	1	1	23	42	38	43	46	34	38	37	110/55
Chromium	mg/L	0.005	< 0.005	0.006	< 0.005	< 0.005	0.005	< 0.005	< 0.005	0.005	< 0.005	-
Copper	mg/L	0.001	0.001	0.003	0.003	0.002	0.003	0.002	0.002	0.002	0.002	3 max
Fluoride	mg/L	0.1	< 0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.127 [a]	0.1	1.5 max
Hardness	mg/L	1	30	109	80	85	89	110	73	78	76	180/110
Iron	mg/L	0.005	0.006	0.024	0.022	0.009	0.009	0.008	0.011	0.030	0.008	-
Lead	mg/L	0.005	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	-
Magnesium	mg/L	1	3	16	9	9	10	12	8	8	8	125 max
Manganese	mg/L	0.005	0.005	0.021	0.012	0.015	0.007	< 0.005	< 0.005	0.005	0.006	-
Nitrate + Nitrite	mg/L	0.01	0.02 [a]	0.26	0.81	NR	NR	NR	NR	0.88 [d]	0.45 [a]	-
Phosphorus - Ortho	mg/L	0.01	0.02 [a]	0.10	0.10	NR	NR	NR	NR	0.08	0.07	-
Phosphorus - Total	mg/L	0.01	0.02 [a]	0.24	0.16	NR	NR	NR	NR	0.13	0.08	-
Selenium	mg/L	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	< 0.001 [a]	< 0.001 [a]	0.05 max
Sodium	mg/L	1	3	29	38	35	38	44	29	33	31	50/40
Specific Conductance	µS/cm	1	74	347	353	351	371	437	295	334 [a]	315	-
Sulfate	mg/L	1	2	26	37	44	41	65	25	28	26	110/20
Total Dissolved Solids	mg/L	1	49	200	200	200	210	252	167	193 [a]	175	440/220
Trihalomethane Formation Potential	µg/L	10	NR	766	449	470 [a]	426	450 [b]	493 [a]	461	420	-
Turbidity	NTU	1	5	67	18	26 [a]	13 [a]	18	19	30	4 [a]	-
Zinc	mg/L	0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	0.006	15 max

Notes: Turbidity is measured by a continuously-recording Nephelometer and expressed as NTU (Nephelometer Turbidity Units), and Specific Conductance is measured by continuous electrical conductivity recorders, except at Thermalito Afterbay and Check 29, which are based on single monthly samples. Values for chlorides, dissolved solids, hardness, percentages of sodium, and sulfate are correlated from specific conductance except at Thermalito Afterbay and Check 29, which are analytical values. All other selected constituents are the yearly mean of laboratory analytical values sampled monthly. Nondetectable values are assumed equal to reporting limits for calculation of mean.

NR = data not collected or recorded at this location.

[a] Mean based on only 11 months.

[b] Mean based on only 4 months.

[c] Mean based on only 7 months.

[d] Mean based on only 10 months.

on these recommendations, activities and investigations within the MWQI Program continue to address these water quality issues. MWQI Program staff plan to begin writing the 2001 sanitary survey update in fall 1999.

The sanitary survey identified the Barker Slough watershed as having the most challenging water quality conditions in the SWP. Water quality problems identified within this watershed included high levels of turbidity and microbial contaminants, as well as high concentrations of organic carbon.

The North Bay Aqueduct/Barker Slough Watershed Study was started to resolve these problems. The study was initially divided into two phases. Phase I began July 1, 1996, and continued until July 1997. The results were published in a report titled *The North Bay Aqueduct Barker Slough Watershed Water Quality Phase I Report*. The second phase began after all sampling for Phase I was completed and reviewed by the Department and the North Bay Aqueduct Technical Advisory Committee. Phase I was designed to quantify water quality constituents at the screening level. Results showed that the upper Barker Slough Watershed was a potentially significant source of contaminants during the wet season. Phase II was designed to further investigate specific pollutants in the upper watershed during the wet season where runoff is high and to collect hydrological data when possible. Results showed that the upper watershed contributes a significant amount of organic carbon and turbidity to Barker Slough during storms. This has been linked to operational challenges for North Bay Aqueduct-supplied treatment plants during these periods. Based on these findings, the Solano County Water Agency has applied for a SWRCB 305(J) grant to work with landowners in the watershed to address these loading issues. Phase III, which began in fall 1998, links the use of auto samplers with automatic hydrological monitoring stations to allow data and water samples to be collected during peak runoff events. The goal is to create mass load calculations at three locations in the watershed. The MWQI Program will continue to work with the stakeholders to provide water quality technical assistance to the project.

In response to a recommendation of the sanitary survey report, the MWQI Program, in coordination with the Division of Operations and Maintenance and the Metropolitan Water District of Southern California, implemented a Coordinated Pathogen Monitoring program for the SWP and the Delta. This monitoring program began in fall 1996 and continued through April 1998. The program evaluated the microbiological status of SWP source waters for protozoans and bacteria. Additional work was conducted to evaluate the current EPA-approved sampling and analysis methodology used for the study. Results from the 18-month sampling study and the methodology evaluation study is scheduled to be published by the MWQI Program in fall 1999.

Other components of the MWQI Program include:

- predictive computer models developed to determine the costs of treating water from different Delta locations;
- evaluation of proposed CALFED restoration actions in terms of drinking water impacts;
- development of a compendium of federal, State, and local entities conducting water quality monitoring from the San Francisco Bay up through the Delta and in the upper watersheds of the Sacramento River; and
- installation and testing of new instrumentation to provide real-time water quality data to improve Delta water quality.

Collectively, these and other MWQI studies and activities are designed and conducted to address major water quality and water supply issues, such as the Delta's ability to meet user needs, the ability to meet stricter State and federal regulations, and the ability to obtain reliable, clean water supplies in the future. Each study or activity serves to discover, test, and assess possible solutions to problems in the Delta and other watersheds of the SWP and assures that future demands for safe, potable water supplies can be met.

Bryte Chemical Laboratory

Bryte Chemical Laboratory, established in 1951, continues to perform the majority of chemical and other related analyses requested to support the Department's water quality programs. Thousands of water samples are analyzed for minerals, nutrients, metals,

pesticides, and other constituents. Bryte Laboratory continues to manage all analytical contracts with outside laboratories according to the Master Contract Policy approved in fiscal year 1994-95. The laboratory works with the Quality Assurance/Quality Control Section to replace contracts that will expire in fiscal year 1998-99.

Analytical procedures and methods are continually updated and evaluated by the laboratory. Several new methods were added to the list of available services after extensive testing and development. One new procedure involved the reactivity of chlorine with naturally occurring organic matter to form disinfection by-products. The new method will characterize formation potentials of trihalomethanes and haloacetic acids, based on the reactivity of chlorine with natural organic matter found in water. In addition, MTBE was added to an existing laboratory method involving the analysis of volatile organic compounds, allowing the laboratory to perform the required analyses for a MTBE survey. This survey was part of a larger survey conducted by the Association of California Water Agencies, which began in May 1997 and ended in November 1997. Because MTBE has been added to the volatile organics method, it will continue to be routinely analyzed whenever a volatile organic analysis is requested.

The laboratory purchased several new analytical instrument systems during fiscal year 1997-98 to modernize and expand its analytical capabilities. Two of the new systems purchased involve sample preparation. The new, automated solid phase extraction system replaces a labor-intensive manual extraction method formerly used to prepare samples for organic analysis. It will not only reduce labor costs (because it is automated), but will also reduce solvent consumption used in the extraction procedures by 80 to 90 percent. These savings in labor and reagent costs will ultimately reduce the cost of the organic analyses. The laboratory also replaced two other outdated analytical instrument systems with new instrument systems. The total organic carbon analyzer and atomic absorption spectrophotometer, used for arsenic and selenium analyses, are now fully automated, with advanced software features for greater data handling and quality control. These systems have enabled the laboratory to increase its capacity and productivity.

The field and laboratory information management system was also implemented during 1997. This system allows electronic transfer of samples for analysis to the laboratory, thus simplifying the transfer process. It provides users with information on all analytical services available through Bryte Laboratory, including costs. It also provides users with sample requirements for each analysis requested, such as types of containers needed, sample volumes necessary, and the type of sample preservation required. The new system is designed to store all current analytical data, including all required Quality Assurance/Quality Control data pertaining to sample analysis. It is designed to log, track, and assign sample analyses to the appropriate chemist in the laboratory. FLIMS will generate the final reports to the requestor in hard copy and, if required, in electronic format. The implementation and beta testing of FLIMS was completed in 1997 and the system is now fully operational.

Quality Assurance/Quality Control

The Quality Assurance/Quality Control Program, established in 1992, ensures that data produced by the Department's annual multimillion dollar investment in environmental monitoring activities meets high quality standards and is also scientifically defensible.

In 1998, the following QA/QC technical document was updated:

- *Quality Assurance Management Plan for Environmental Monitoring Programs*

In addition, the following technical document continued to be developed:

- *Bryte Chemical Laboratory Quality Assurance/ Quality Control Manual*

The QA/QC program actively ensures that in-house and contract laboratories providing analytical services for the Department comply with QA/QC procedures, standards, and requirements. The QA/QC program:

- periodically submitted performance evaluation samples to all in-house and contract laboratories to evaluate their performance;
- conducted an evaluation of the QA/QC procedures of some of the Department's continuous monitoring equipment;
- continued the QA/QC review of incoming environmental data for programs within the Water Quality Assessment Branch of the Division of Planning and Local Assistance; and
- began using FLIMS at Bryte Chemical Laboratory. This data system allowed the lab to handle sample analysis much more efficiently. Data are being archived in anticipation of the development of a water data library of the Department's surface and ground water quality data. Electronic data results are also being passed on to the laboratory's customers upon request.

Quality Assurance/Quality Control

The water-related data collected by the Department must be scientifically supportable. To help protect the Department's large investment in water-related data, the Quality Assurance/Quality Control Program was created in 1992. Under the QA/QC program, guidance documents are published, training courses are implemented, and technical support is provided to managers of water data collection programs throughout the Department.

In addition to its basic mission of supporting and strengthening the validity, integrity, and credibility of water data collected by the Department, the QA/QC program also provides leadership in efficient planning and execution of data collection activities. To minimize cost, it is necessary to carefully plan, implement, interpret, and evaluate data collection activities. Good data collection programs begin with identifying the data collection goal and establishing the data quality objectives to meet the goal. This planning is done before actual data collection and assures that the correct type and amount of data are collected to meet program objectives. Through this process, the Department avoids collecting inadequate, irrelevant, or extraneous data, and thereby avoids waste.

Other services provided by the QA/QC Program include helping other Department programs develop quality assurance project plans, evaluating QA/QC data to determine the accuracy and precision of environmental data, and testing and evaluating the performance of environmental monitoring equipment. Ongoing assistance is provided to all departmental environmental monitoring programs, including those within DPLA, O&M, Environmental Services Office, and the Interagency Ecological Program.

The QA/QC program also conducts research into new methods and procedures used by analytical laboratories and evaluates new types of field equipment for sampling or analysis. These research activities include developing and implementing analytical protocol for simulated distribution system testing for trihalomethanes and haloacetic acids, stability of organic carbon concentrates in samples obtained by autosamplers, and an on-line real-time total organic carbon autoanalyzer.

Suisun Marsh Activities

The Suisun Marsh

Suisun Marsh is about 59,000 acres of tidal and managed brackish water wetlands and 30,000 acres of bays and sloughs. It is the largest contiguous estuarine marsh remaining 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 thousands of waterfowl migrating on the Pacific Flyway.

Since the early 1970s, the California Legislature, SWRCB, USBR, DFG, Suisun Resource Conservation District, the Department, and other agencies have focused on preserving the Suisun Marsh as a unique environmental resource. As part of its responsibility for protecting Suisun Marsh, SWRCB included water quality standards for the marsh in D-1485 and WR 95-6 (amending D-1485), which apply to SWP and CVP operations. In 1987, the Department, USBR, DFG, and SRCD signed the Suisun Marsh Preservation Agreement (see sidebar on the following page). SMPA contains provisions for actions to control channel water and soil salinity to mitigate for impacts of the SWP, CVP, and other upstream diverters on managed wetlands in Suisun Marsh.

Suisun March Preservation Agreement Activities

Amending the SMPA. The purpose of Amendment Three is to change SMPA to provide equivalent or better protection to Suisun Marsh-managed wetlands as intended under the original agreement. Amendment Three would make the channel water salinity standards consistent with SWRCB's 1995 Water Quality Control Plan.

Amendment Three of SMPA would update the original agreement. Original provisions of SMPA provide or fund facilities or activities that mitigate effects of reduced Delta outflow caused by SWP and CVP operations and other upstream diverters. Amendment Three would replace large-scale facilities with water and land management actions on managed wetlands to meet the objectives of the original agreement. Amendment Three actions are described in detail in the draft environmental assessment and initial study prepared by SMPA parties in June 1998.

In the original agreement, SMPA parties agreed to limit its provisions primarily to managed wetlands. However, when the Mitigation Agreement, a companion agreement to SMPA, is updated, it will broaden potential mitigation activities to include restoration of tidal wetlands. In addition, the undiked wetlands may be considered in other forums or agreements, such as SWRCB water quality control planning for the Delta, CALFED, USFWS Tidal Marsh Recovery Plan, and Regional Wetland Habitat Goals Project. Other legal and administrative forums addressing the Suisun Marsh are discussed in detail in the Draft Environmental Assessment and Initial Study for SMPA Amendment Three.

In addition, Amendment Three incorporates channel water salinity standards in the marsh similar to those under the original agreement, consistent with SWRCB's terms and conditions in departmental and USBR water rights permits for the SWP and CVP. At the same time, actions in Amendment Three would provide equivalent or better protection to the western marsh than the SWRCB channel water salinity objectives for stations S-35 and S-97 as described in the *Demonstration Document*.

Amendment Three also requires amending and revising the companion Suisun Marsh Monitoring Agreement. Any monitoring required as part of the new actions would be included in the updated Monitoring Agreement and the Suisun Resource Conservation District will be included as a participant in the new monitoring program. The monitoring agreement will be amended after Amendment Three is finalized and signed by the four SMPA parties.

Before finalizing the draft environmental assessment/initial study, the parties will formally consult with the USFWS, pursuant to Section 7 of the Endangered Species Act, to obtain a biological opinion on

Suisun Marsh Preservation Agreement

In 1986, federal legislation (Public Law 99-546) authorized funds to USBR to protect Suisun Marsh. On March 2, 1987, the Department, USBR, DFG, and SRCD signed SMPA. The objective of SMPA is to assure that USBR and the Department mitigate for any adverse effects of the Central Valley Project and State Water Project on managed wetlands in the marsh, as well as a portion of the adverse effects of other upstream diversions. Under the original agreement, this objective is primarily accomplished by constructing large-scale facilities in the marsh to maintain a dependable supply of adequate quality water within Suisun Marsh channels. A component of the large-scale facilities is the Suisun Marsh Salinity Control Gates facility, which began operating in November 1988.

On August 4, 1995, the Suisun Marsh Coordinators, representing the four agencies party to SMPA, began discussions directed at updating the agreement, pursuant to SMPA Articles 4 and 17. Representatives from USBR, the Department, DFG, and SRCD established an ad hoc Negotiating Team, Technical Group, Drafting Committee, and Environmental Documentation Team. Beginning September 1995, the SMPA Negotiation Team met monthly in Sacramento and made significant progress in developing the basis to amend the agreement. Representatives from the SWP and CVP contractors actively participated in the negotiations. Updating SMPA will reflect future hydrologic and salinity conditions in the Suisun Marsh as prescribed by the SWRCB 1995 Water Quality Control Plan and will place more emphasis on improving water and land management practices and facilities on managed wetlands. The SMPA parties will sign Amendment Three after completing CEQA and NEPA documentation and CESA and ESA consultations.

potential impacts of Amendment Three on endangered species. The parties intend to initiate formal consultation in summer 1999 with the goal of obtaining a draft biological opinion during spring 2000. After public comment on the draft environmental assessment/initial study and the biological opinion, the SMPA parties may need to revise Amendment Three and the draft environmental assessment/initial study to address any new information or environmental impacts unknown at this time. The parties plan to receive a final biological opinion and sign Amendment Three by summer of 2000.

SMPA Environmental Coordination Advisory Team. The SMPA Environmental Coordination Advisory Team was convened to ensure compliance with mitigation and monitoring responsibilities specified in the SMPA. ECAT includes staff from the Department, USBR, DFG Grizzly Island, DFG Central Valley Bay-Delta Branch, and SRCD. USFWS, NMFS, and the U.S. Army Corps of Engineers staff participate on the ECAT in an advisory role.

ECAT documents compliance with biological opinion terms and conditions and permit requirements, and provides reports to SMPA coordinators. ECAT will play a significant role in implementing an amended Suisun Marsh Mitigation Agreement as part of the Amendment Three process. ECAT will coordinate preconstruction inspections as specified in Amendment Three for the Wetland Management Program, Joint-Use Facilities, and Portable Pumps activities. ECAT will also provide guidance to the Water Manager Program, which, as specified, will advise landowners on management practices that benefit endangered species.

Individual Ownership Cost Share Program. The Individual Ownership Cost Share Program is a component of SMPA designed to assist individual landowners with water management on privately owned land within the Suisun Marsh. Funded projects include replacing, lowering, and/or enlarging drainage structures and purchasing pumps to assist drainage. The program began in 1987 with a 50-percent reimbursement by the Department and USBR. Participation in the program has greatly increased since 1994, when SMPA coordinators retroactively increased departmental and USBR reimbursement to 75 percent.

In 1998, two applications for water management projects were submitted and paid. The total cost of these improvements was $46,633, of which $39,936 was paid to SRCD and distributed to the landowners. SRCD has seven additional applications for work completed in 1998, and is expected to forward these applications to the Department and USBR for reimbursement during early 1999. The Department and USBR have paid a total of $1,192,239 since the program began in 1987.

Lower Joice Island Water Intake Fish Screen. During 1997, the Department, under contract with SRCD, installed a 12-foot diameter conical fish screen on the Montezuma Slough on Lower Joice Island. This intake was constructed in 1990 and permit conditions required installation of a fish screen. Under SMPA, the Department was responsible for installation of the screen, and the individual ownership had responsibility for its operation and maintenance. SRCD and the landowner accepted the installed fish screen on September 9, 1998. Total construction and installation cost was $403,400.

SWRCB Water Rights Hearings

SWRCB included SMPA management actions specified in Amendment Three as an alternative in its draft EIR for implementing the 1995 Bay/Delta Plan. During the water rights hearing for implementing the 1995 Bay/Delta Plan, which began July 1, 1998, SMPA parties recommended that SWRCB select these actions as the next step in implementing the objectives for Suisun Marsh-managed wetlands.

Suisun Ecological Workgroup

In the 1995 Bay/Delta Plan, SWRCB directed the Department to convene an interagency work group to evaluate the technical basis of the Suisun Marsh water quality objectives and their effects on beneficial uses. Consequently, the Suisun Ecological Workgroup was formed in May 1995, with the purpose of recommending salinity objectives protective of the beneficial uses of the Suisun Marsh. SEW began this process by forming resource-based subcommittees, with participants selected based on their technical expertise. Each subcommittee was responsible for evaluating the impact of various salinity regimes on its ecosystem component, such as brackish marsh vegetation, wildlife, waterfowl, or fish. Findings

from these evaluations, which included identification of significant data gaps, recommendations for long-term monitoring programs, and special studies, were presented at an all-day workshop in March 1998.

In May 1998, SEW participants began examining the effect of salinity on the marsh ecosystem. SEW participants evaluated the impacts of increasing the variability of salinity in the Suisun Marsh. Some subcommittees suggested that a more variable salinity might match historic conditions more closely, support native species, and possibly promote species diversity by decreasing the abundance of nonnative competitive species. However, the marsh has been altered so much that increasing variability in the salinity may, instead, negatively impact the managed wetlands in the marsh. To evaluate these issues, SEW examined and compared alternative salinity regimes. The main alternatives evaluated are:

- Suisun Marsh conditions (X2 standard, Suisun Marsh Salinity Control Gate operation, and numeric standards for the interior marsh);
- Suisun Marsh conditions, with actions in the proposed SMPA Amendment Three;
- X2 standard with SMPA Amendment Three limited to management actions and limited SMSG operations; and
- X2 standard, with limited control gate operations and no interior marsh numeric salinity standards.

The group evaluated the Department's model studies that simulated flow and salinity in the Suisun Marsh with and without control gate operations.

SEW initially intended to recommend several alternatives for salinity objectives, protective of most beneficial uses in the marsh. However, after debating the potential impacts of various salinity regimes on the physical and biological aspects of the ecosystem, it became apparent that the most productive approach was for each subcommittee to produce its own set of recommendations and to comment on the recommendations of other committees. The report to SWRCB will include these different recommendations and highlight common areas among the recommendations.

Since May 1998, subcommittees focused on producing recommendations and drafting their subcommittee chapters, which are expected to be included in SEW's final report to SWRCB. These subcommittee chapters are expected to be distributed for internal review by February 1999.

Modeling Support

SWRCB 1995 Water Quality Control Plan Draft Environmental Impact Report

The departmental Suisun Marsh planning staff completed a modeling analysis of the salinity impacts of the 1995 Water Quality Control Plan in support of the SWRCB draft EIR for implementation of the plan. The report covers six alternatives for salinity control in the marsh, including the management actions proposed under the SMPA Amendment Three process. Since completion of the draft EIR, the amendment management actions have changed. Augmentation of Green Valley Creek from Fairfield Treatment Plant effluent was found institutionally infeasible at this time. The four parties to SMPA modified the management actions, dropping the GVC augmentation and adding a drought response fund in its place. Since Alternative 5 of the modeling report included GVC augmentation as an SMPA management action, it was modified to reflect the current actions. Alternative 5 has been rerun to reflect 1995 WQCP standards and flows and allow for September operation of the control gate. The modeling results are being postprocessed, and an addendum to the Department's modeling report will be prepared for the Board in 1999 before Phase 8 of the Water Rights Hearings.

Suisun Ecological Workgroup

In 1998, Suisun Marsh planning staff provided hydrodynamic and water quality expertise, participated in SEW meetings, and actively participated on the SEW Aquatic Habitat Subcommittee. In addition to providing input to the SEWAH data analysis and recommendation process, Suisun Marsh planning staff performed a statistical study of the correlation between fish abundance in the Suisun Marsh and the location of X2 in Montezuma Slough.

CALFED Suisun Marsh Levee Breach Investigation

The CALFED Bay-Delta program is developing information on the costs and benefits of including Suisun Marsh levees in CALFED's Levee System

Integrity Program and how it would relate to CALFED objectives. A sub-team of the CALFED Levees and Channels Committee was formed to develop this information using modeling analysis and mapping. Twenty-eight individual 2-year modeling simulations have been identified to investigate the hydrodynamics and salinity impact of levee breaches to create shallow water habitat and tidal marsh consistent with CALFED ecosystem restoration goals.

CALFED is considering protection of Suisun Marsh levee integrity for two primary reasons:

- Protection of the exterior levees in the Suisun Marsh sustains seasonal wetland values.
- Maintenance of Suisun Marsh levee integrity ensures that conversion of managed wetlands to tidal wetlands or bayland shallow-water habitat will not be due to levee failure, but instead will be planned with consideration of landowner support, Ecosystem Restoration Program targets, regional wetlands habitat goals, and endangered species recovery plans.

In early February 1998, about 22,000 of the 57,000 acres of the managed wetlands in Suisun Marsh were flooded. The tidal prism in the marsh was expanded by about 85,000 acre feet, roughly 40 percent of the volume of Suisun Bay. The Department and USBR repaired the 11 exterior levee breaches at a cost of about $1.1 million, to protect the approximately $80 million program/infrastructure, maintain the ability to meet Suisun Marsh salinity standards, and protect Suisun Marsh and Delta water quality.

In 1998, the Department's Suisun Marsh planning staff conducted a hydrodynamics and salinity modeling analysis to evaluate the potential impacts on the marsh and Delta if the Suisun marsh levee breaches were not repaired. Staff expected that the increased tidal prism created by the additional inundated lands would generally increase mixing of ocean salt into the Bay and Delta. The actual response was more complex. Modeling results suggested that Suisun Bay salinity would generally increase, extreme north and south Delta salinity would decrease, and western Delta salinity would increase or decrease, depending on the size and location of levee breaches and the nature of the tidal flux through the breach.

The CALFED Suisun Marsh levee sub-team modeling analysis is intended to elucidate the mechanisms of the hydrodynamics and salinity response and to identify the links between potential habitat restoration benefit and levee integrity goals.

Interagency Ecological Program DSM2 Project Work Team

In 1998, the Department's Suisun Marsh planning staff hosted four Delta Simulation Model 2 project work team meetings. The team is expected to conduct a multiple-agency consensus calibration of the DSM2 model by December 1999 for the IEP.

Suisun Marsh Technical Advisory Committee

In 1998, departmental staff facilitated four Suisun Marsh Technical Advisory Committee meetings, which were scheduled quarterly to increase staff time and resource efficiency. Representatives from federal, State, and local agencies attended the meetings. Meeting announcements and summaries were distributed to more than 60 people, including SWRCB staff.

Operation and Maintenance

Suisun Marsh Salinity Control Gates

The Suisun Marsh Salinity Control Gates are operated as needed during the control season (October 1 to May 31) to meet salinity standards and minimize fish concerns related to predation and impedance. To date, the scheduling of control gate operation and the installation or removal of the flashboards have varied because of existing salinity conditions, requests from fisheries agencies for sensitive-species concerns, or to allow for special studies and repairs.

During the 1997-98 control season, the control gates were operated from October 14 through December 3, 1997. Heavy precipitation in December, January, and February lowered salinity throughout the marsh, eliminating gate operations for the rest of the control season. On February 3, 1998, the flashboards were removed due to concerns about marsh flooding. They were not reinstalled until the 1998-99 control season.

Control gates were not needed to meet salinity standards during the first half of the 1998-99 control season. However, the flashboards were installed at the

end of September, and the gates were operated intermittently during October and November as part of a joint study by the Department, USBR, DFG, SRCD, and NMFS to evaluate the use of modified flashboards to promote passage of adult salmon. The operations were timed to coincide with the release of tagged adult salmon over three different time periods. The first period was October 1 to October 12, with the normal flashboard configuration. The second, or base case, phase was October 14 to October 26, when the gates were held open with the flashboards removed. The third period was October 27 to November 12, when the gates were operated with the modified flashboards, which contain installed slots allowing a continuous passage opportunity. The gates were not operated November 13 to the end of the year, although the modified flashboards were left in place to allow for further data collection.

In the course of the adult salmon migration portion of the test, the control gate operational data were closely scrutinized over the October to November study period. It quickly became apparent that the gates were not responding well to opening/closing triggers. The most common problem was late gate openings; however, there were also incidences of late closings, and neither followed any discernible pattern. Since this problem occurred both before and after the modified flashboards were installed, it is believed that the flashboard modification is not the cause of the gate malfunction. This timing problem prompted an investigation into operational procedures, including the proprietary software used to process operational data. The investigation continued through 1998.

Morrow Island Distribution System Maintenance. Maintenance on Morrow Island Distribution System began in 1997. Distribution ditches were dredged, and the spoils were placed on the south levee, including some adjacent wetlands. In 1998, the dried spoils were used to rehabilitate the project levees, which were raised to design height. Project maintenance and on-site mitigation is approximately 90 percent complete.

Roaring River Distribution System Maintenance. The Roaring River Distribution System was completed and became operational in 1980. Fish screens were installed and tested on two intake culverts in 1980 and on the remaining six culverts in 1983. In 1997, the slide gates on the eight intake culverts were automated to maintain the USFWS 0.2 feet per second fish-screen velocity criteria.

Plan of Protection for Suisun Marsh

The Plan of Protection for Suisun Marsh, published under the requirements of SWRCB Decision 1485, was designed to ensure that D-1485 standards are met. The plan contained a proposal to monitor water quality; develop management plans for managed wetlands; install, in phases, physical facilities to control channel water salinity for interior marsh sloughs; and provide mitigation for construction impacts associated with physical facilities.

The plan also included a programmatic environmental impact report that discussed actions identified in the plan and the effects of each action. According to the plan, the Department and USBR, as lead agencies, would prepare supplemental environmental documentation if new significant impacts were identified during the planning and implementation of subsequent actions.

The Plan of Protection suggested six phases to provide salinity control for the Suisun Marsh. Phase I (Initial Facilities) and Phase II (Suisun Marsh Salinity Control Gates) are complete. In 1990, Phases III and IV, directed at the western Suisun Marsh, were combined and identified as the Western Suisun Marsh Salinity Control Project. Discussions about Phase V, the Grizzly Island Distribution System, were initiated with SRCD in 1993. The Potrero Hills Ditch was identified as Phase VI. In 1995, the Department, USBR, DFG, and SRCD agreed that the additional large-scale facilities in Phases III through VI are not necessary for salinity control in the Suisun Marsh because of the Delta hydrology resulting from implementation of the 1995 Bay-Delta Plan and the effectiveness of the Suisun Marsh Salinity Control Gates. The parties arrived at this decision based on data collection during control gates operation and departmental model studies conducted in support of the 1995 Bay-Delta Plan and EIR for its implementation as described in this section.

In 1998, significant repairs were made to both the intake fish screens and the levee system. In October 1997, a routine inspection of the fish screens revealed an opening 40 feet long by 4 feet deep below the base of the fish-screen structure. In February 1998, floodwaters damaged a significant portion of the levee system. Fourteen sites, about 4 miles total, were damaged and required repair before operating the distribution system.

All environmental documentation required to begin the repairs was obtained by July 1998. The contractor began repair work on the levees and fish screen on August 31 and completed work on September 27. About 32,200 tons of fill material and 5,100 tons of aggregate base were used to restore the levees to pre-flood elevations. The openings below the fish screen structure were repaired using a combination of stone-slope protection, sack gabions and 3-inch rockfill. In addition, the Department's Delta Field Division placed an additional 200 tons of riprap along the waterside bank of the repaired areas to prevent erosion. The total cost of the repairs was approximately $1.2 million, shared by the Department, DFG, and USBR.

The Department plans to restore the entire RRDS levee system to design specifications. During 1998, surveys of the levee system were conducted and plans and specifications developed for the work. It is anticipated that the maintenance will be conducted during the summer of 1999.

Suisun Marsh Levees

Suisun Marsh Flood Fight and Emergency Repairs

Heavy precipitation, high tides, and low atmospheric pressure during early February 1998 contributed to extensive flooding in Suisun Marsh. SRCD and DFG Grizzly Island reported 29 levee breaks or locations of overtopped levees during early February 1998. The Department and USBR funded repairs of the 11 most significant breaks. The U.S. Army Corps of Engineers repaired four areas, including two breaches and two overtopped areas. The remaining seven sites were repaired under contract with SRCD. The cost for the repairs was approximately $1.1 million. An Incident Command Center was also established at the SRCD office on Grizzly Island to coordinate local flood fight efforts.

One breach repaired by the Corps, San Souci, which repeatedly breached after three attempts to repair it, was left open. One of the overtopped areas experienced subsidence in June and July 1998 and was repaired by the Reclamation District. The Department's Flood Management staff assisted in the wave-wash protection effort during July.

Long-Term Levee Maintenance Options

In February 1998, the Department and USBR emphasized that the emergency levee repairs were in response to extraordinary circumstances and did not constitute a commitment to assume future responsibility for the repair and upkeep of privately owned levees, which is clearly stated in SMPA.

Only a small portion of Suisun Marsh levees are eligible for State funds for flood control projects under the Assembly 360 Delta Flood Protection Program. The Department informed eligible local agencies of the AB 360 program and the application process.

However, the CALFED Bay-Delta Program has established the Suisun Marsh levees sub-team to help decide if, and what portion of, Suisun Marsh levees should be included in the CALFED levees program. The Department's Suisun Marsh Branch staff is participating on the CALFED Levee Investigation Team. Staff completed a preliminary model study to evaluate the potential impacts of unrepaired Suisun Marsh levee breaches on Delta water quality, and reported its findings to CALFED. (See Modeling Support section.)

Monitoring

Comprehensive Review of Suisun Marsh Monitoring Data

SMPA and the Suisun Marsh Monitoring Agreement, which were signed in 1987, outlined a monitoring program for data collection in the Suisun Marsh. The agreements also stipulated that every 5 years a review shall be conducted to assess the effectiveness of the monitoring program in achieving SMPA objectives. This review was not completed in 1992, and a Comprehensive Review of 11 years of data (water

years 1985 to 1995) began in 1996. In addition to assessing the effectiveness of the agreements' actions, the review analyzes data collected by the monitoring program. The monitoring program includes pond water salinity, soil water salinity, and pond stage data from diked, managed wetlands in the marsh. In addition, channel water salinity data from the Suisun Marsh monitoring and compliance stations was used. One task of the monitoring program was to collect data to better understand the relationships between channel water salinity and pond and soil water salinity.

In 1998, the analysis of the data was completed, and an in-house draft circulated for review. The final report, including recommendations for future monitoring, is expected to be released in summer 2000.

Water Quality Monitoring and Compliance

Data on salinity and tide stage are collected from a network of sites in Suisun Marsh channels (Figure 4-2). SWRCB WR 95-6 specified Suisun Marsh channel water salinity standards for seven compliance stations. Four of these—National Steel (S-64), Beldons Landing (S-49), Volanti (S-42) and Sunrise (S-21)—are located within the marsh. A fifth—Collinsville (C-2)—is located in the western Delta. The Department has requested that the two remaining sites located in the western marsh—Morrow Island (S-35) and Ibis (S-97)—be converted to monitoring stations because of the SWP's minimal control of salinity levels at these locations. A variance to allow all compliance stations to test the control gates' modified flashboards has been granted. The variance is effective through May 31, 2001.

Flow monitoring continued at two tributary locations (S-10 and S-16). Data collected at these locations are used as boundary conditions in computer simulation models the Department uses to analyze and forecast salinity levels within the marsh. These modeling studies are used to help determine alternative methods of achieving salinity standards in the marsh during dry periods.

A number of repairs and upgrades were completed during 1998. Discharge monitoring station S-16 (Suisun Creek) was constructed to replace S-15, which was washed away by high floodwaters in January 1997. Major repairs to existing stations included tide-well stabilization and structural repairs to equipment housing units and access features. Other equipment changes included installation of electronic data recorders at S-37, C-2, S-54, and S-16. Tidal stage was added to the data collected at S-4, and site S-90 was deactivated.

Vegetation Monitoring

Under SMPA, the Department and USBR are required to conduct a vegetation survey of the Suisun Marsh every 3 years. In 1997, a 1-year delay was instituted to reevaluate and update the field and imaging methodologies.

A field reconnaissance was conducted to help develop a new survey methodology, and aerial photos were taken in June 1998. DFG's Wildlife Habitat and Analysis Branch is in the process of preparing a final proposal for a survey methodology. The next vegetation survey is scheduled for summer 1999.

Salt Marsh Harvest Mouse Trapping and Habitat Surveys

In 1981, the U.S. Fish and Wildlife Service issued a Biological Opinion for the Suisun Marsh Plan of Protection. In it, USFWS expressed concern that the implementation of the plan and more intensive management practices on both State and private wetlands could result in the reduction of preferred salt marsh harvest mouse (*Reithrodontomys raviventris halicoetes*) habitat. To compensate for this potential loss, the USFWS required the following conservation measures:

- mapping of baseline acreage of preferred salt marsh harvest mouse habitat using the 1981 triennial vegetation survey flight. A change in preferred habitat is considered significant when the acreage decreases by one-third in any of five zones during subsequent flights. If losses are detected, management plans will be modified to assure that substantial tracts of preferred habitat are retained and that any degraded habitat is restored;
- retention and monitoring of at least 2,500 acres of preferred salt marsh harvest mouse habitat adequately distributed throughout the marsh;

Figure 4-2
Compliance and Monitoring Stations in the Suisun Bay and Marsh

- setting aside approximately 1,000 acres of State lands and appropriate portions of future acquisitions to be managed as preferred salt marsh harvest mouse habitat; and
- development of comparable amounts of habitat to compensate for the loss of 340 acres of wetland, including 100 acres of salt marsh harvest mouse habitat. The 100 acres is to be managed as preferred habitat.

To date, a baseline assessment of salt marsh harvest mouse preferred habitat has not been finalized, and the 2,500-acre goal has not been reached. DFG set aside seven areas totaling 1,078 acres, as well as the Peytonia Slough Ecological Reserve (150 acres), as preferred salt marsh harvest mouse habitat in Suisun Marsh.

In 1998, the signatories to SMPA formed an Environmental Coordination Advisory Team to assure future compliance with permit and monitoring requirements. ECAT is working with the USFWS to meet the requirements, and implementation is proceeding.

Monitoring to determine whether the salt marsh harvest mouse is present on the 1,078 acres of mitigation land was conducted in August and September 1998. In addition to the seven set-aside areas, the Peytonia Slough Ecological Reserve was also trapped. One hundred live-traps were set in areas of best available habitat at each of the seven set-aside areas for 3 consecutive nights.

Salt marsh harvest mice were caught at six of the eight areas trapped. Mice were not captured at two tidal areas (Hill Slough East and Joice Island), where the pickleweed habitat appeared to be less than ideal. Mouse populations on Grizzly Island were lower in 1998 than in previous years. This may be due, in part, to the 1998 flood event.

Suisun Marsh Waterfowl Feeding Ecology Study

The second and final field season of the Suisun Marsh Feeding Ecology Study was completed December 31, 1998. A total of 115 birds was collected, including 49 mallards, 34 northern pintails, and 22 green-winged teal. Habitat data were collected from 20 different feeding sites throughout the marsh. Members of 24 privately-owned managed wetlands in the marsh contributed esophagi from their birds. More than 200 samples were turned in from the private clubs. In addition, esophageal collection began at the DFG Grizzly Island check station. Hunters on DFG ponds proved to be very cooperative and contributed more than 350 additional samples to the study. In 1997, 118 birds were collected: 52 mallards, 45 northern pintails, and 21 green-winged teal. Eighteen duck clubs from throughout the marsh contributed more than 200 samples. Habitat data were collected from 26 feeding sites.

Laboratory work at the University of California at Davis is in progress. Esophageal contents from the 1997 collected birds and approximately half of the 1997 contributed club birds were sorted, dried, weighed, summarized, and analyzed. Due to time constraints, feeding-site core samples from all 26 of the 1997 feeding sites were subsampled and analyzed to determine necessary subsample sizes. Laboratory sorting and analysis will continue until the final report is issued in fall 1999.

Fish and Aquatic Species Monitoring

During 1998, the Department contracted with UC Davis and DFG to conduct fisheries monitoring in Suisun Marsh. The monitoring was conducted to meet the Corps and San Francisco Bay Conservation and Development Commission permit requirements for construction and operation of the Suisun Marsh control gates.

UC Davis has sampled for fish in Suisun Marsh since 1979, with Department and USBR funding. During 1998, sampling continued as in previous years. Results from 1998 sampling will be available by spring 1999. Data from the 1997 sampling indicate that the long-term population fluctuates at lower abundances. The decline seems independent of the control gate operation. Since 1988, introduced species have dominated the fisheries community. The presence of eggs and larvae of Delta smelt and longfin smelt indicates that these species used the marsh for spawning and rearing in 1994-97; however, splittail larvae were only captured in 1995 and 1996.

DFG has monitored *Neomysis mercedis* densities and chlorophyll *a* concentration, an indicator of phytoplankton abundance, in the marsh since the late 1970s. In 1997, *N. mercedis* and chlorophyll *a* sampling was conducted monthly throughout the year. *N. mercedis* has been declining in Suisun Marsh since the 1970s, with the most dramatic decreases evident after 1991. In 1997, abundance continued at lower levels. Food limitation, caused by reduced phytoplankton abundance, is the most probable cause for the decline. Overall, chlorophyll *a* concentration has decreased in Suisun Marsh since 1987. The decline has been attributed to the presence of *Potamocorbula amurensis* and to decreases in freshwater flows during drought years. In 1997, chlorophyll *a* concentrations were low, at similar levels to 1996. Construction and operation of the control gates does not appear to have further decreased chlorophyll *a* levels. Results from 1998 sampling are expected to be available in mid-1999.

DFG biologists conducted striped bass egg and larva sampling in Suisun Marsh from 1984-88 and from 1993-95. From 1984-88 (before the control gates were installed), striped bass eggs and larvae in Montezuma Slough comprised 0.04 to 0.20 percent of the total eggs and larvae in the Delta. In 1994, abundance in Montezuma Slough comprised 0.28 percent of total egg and larval abundance in the Delta, similar to levels seen in years prior to installation of the control gates. Larvae collected in 1995 were not measured; consequently, biologists could not calculate abundance indexes. Based on the limited data available, it appears that the gates are not affecting striped bass egg and larval development in Suisun Marsh.

DFG researchers also conduct sampling for juvenile striped bass (defined as fish with mean length from 17.8 mm to 38.1 mm) in Suisun Marsh. In 1997, abundance in Montezuma Slough was the lowest measured in the last 10 years. A gradual decrease in the average abundance has been observed in the Delta and Montezuma Slough since sampling began in 1959. Since the decrease has been relatively constant over the last 30 years, it is unlikely that changes in abundance were due to installation and operation of the control gates.

Mitigation and Fulfillment of Permit Conditions

Suisun Marsh Salinity Control Gates Flashboard Study

In 1993, the Department convened a technical advisory group of interagency biologists referred to as the SMSCG Steering Group. The group, consisting of biologists from the Department, DFG, USBR, the Corps, NMFS, USFWS, and SRCD, is charged with recommending, designing, and reviewing monitoring studies and results to ensure that the Department and USBR meet the Corps' permit requirements for control gate operations. In 1998, the SMSCG Steering Group developed a recommendation to minimize the delay/blockage for adult salmon at the gates, while continuing to meet channel water salinity standards in Suisun Marsh. The recommendation was based on results from the 1993 and 1994 Adult Salmon Migration Studies, a population level evaluation of the potential impacts of gate operation, and the Adult Salmon Passage Mitigation Report that proposes several ways to minimize delays at the control gates.

The SMSCG Steering Group evaluated the measures to minimize delays for adult salmon passage based on their impacts to salinity and their probability of increasing salmon passage. The group chose to install a dual 3-foot horizontal slot in the flashboard portion of the structure. A 3-year study was designed to evaluate the effectiveness of the slots at providing passage for adult salmon and resulting changes in salinity. The first year of the study began in the fall of 1998. An interim report is expected in 1999. Eventually, fisheries and salinity data from all 3 years of the program will be evaluated by the SMSCG Steering Group to determine whether the modification is a success.

Morrow Island Distribution System Maintenance Project

Two primary mitigation measures were required under the conditions of the permit for the MIDS project. These requirements are:

- establishment of 57 acres of salt marsh harvest mouse habitat to mitigate for approximately

19 acres of habitat temporarily disturbed during maintenance; and

- installation of a fish screen at the intake of the distribution system to mitigate the impacts on Delta smelt during the project and reduce impacts on that species during future system operations.

The off-site mitigation area has been located and approved by the Department, DFG, the Corps, and USFWS. The mitigation area was proposed to ECAT in 1998; ECAT is expected to approve it in 1999. Fifty-seven acres of salt marsh harvest mouse habitat will be created on the Island Slough property, in addition to the 100 acres that are currently being created.

Reports

In 1998, the following reports on the Suisun Marsh were written or published.

- *Suisun Marsh Annual Data Summary Reports. The Annual Data Summary Reports* for water years 1995 and 1996 were released in 1998. The reports review information collected during channel water salinity monitoring, waterfowl surveys, salt marsh harvest mouse surveys, and fish studies. The 1995 report includes the results of the 1994-95 Western Suisun Marsh Salinity Control Test. The results of monitoring activities in the marsh during water year 1997 are expected to be available in spring 1999. The report format will be revised from previous years. Most of the background information, such as legislative history and general Suisun Marsh hydrology, will be removed and placed in a separate document entitled *Suisun Marsh Monitoring Program Data Summary Report Reference Guide*. The *Reference Guide* will provide comprehensive background information on the Department's Suisun Marsh monitoring program. This document is referenced in the *Annual Data Summary Report* and will be available on the Internet or by request. The intent is to streamline the report preparation process for future years. The *Reference Guide* will be available concurrently with the data report.
- *Suisun Marsh Salinity Control Gates Fisheries Monitoring Annual Report*. The *Suisun Marsh Salinity Control Gates Fisheries Monitoring Annual Reports* for water years 1996 and 1997 are in preparation and due to be released soon. Both reports should be released by summer 1999.
- *Draft Environmental Assessment/Initial Study for Amendment Three to the SMPA* (June 1998).
- *Suisun Marsh 73-Year Model Study in Support of SWRCB Draft EIR for Implementing the Water Quality Control Plan of the San Francisco/Sacramento-San Joaquin Delta Estuary* (November 1997).
- *Demonstration Document: SMPA Amendment Three Actions as a Means to Provide Equivalent or Better Protection at Suisun Marsh Stations S-35 and S-97* (April 1998). The purpose of the Demonstration Document was to demonstrate that the management actions in the proposed SMPA Amendment Three would provide equivalent or better protection than the channel water salinity standards for western Suisun Marsh stations S-35 and S-97 specified in the SWRCB 1995 Bay/Delta Plan.

Suisun Marsh Expenditure History

Table 4-2 summarizes Suisun Marsh expenditures and reimbursements administered by the Department for calendar years 1968 through September 1998.

From 1968 through September 1998, the Department disbursed more than $85 million of SWP funds for planning, design, environmental documentation, construction, maintenance, monitoring, mitigation, and permit compliance in support of implementing the Plan of Protection for the Suisun Marsh and SMPA, and meeting standards set by SWRCB. USBR has reimbursed the Department about $32.8 million (39.1 percent), and the California General Fund has reimbursed about $9.5 million (11.3 percent). These figures do not include up-front payments made by USBR for staff and other direct costs, as well as about $5.7 million in USBR interest payments during 1988 and 1989.

Annual figures are reported in Table 4-2 for the Department's upfront and cumulative payments, USBR reimbursements, and general fund reimbursements.

Table 4-2
Suisun Marsh Expenditures and Reimbursements, as of September 30, 1998
(in dollars)

Calendar Year	*Upfront Payment*	*USBR Reimbursement*	*General Fund Reimbursement*	*Cumulative Expenditure Balance (CXB)* [a]
1968	10,571	0	0	10,571
1969	34,182	0	0	44,753
1970	23,343	0	0	68,096
1971	1,042	0	0	69,138
1972	47	0	0	69,185
1973	0	0	0	69,185
1974	0	0	0	69,185
1975	2,709	0	0	71,894
1976	32,961	0	0	104,855
1977	37,475	0	0	142,331
1978	350,831	0	0	493,162
1979	3,660,096	0	0	4,153,258
1980	5,005,759	0	0	9,159,017
1981	2,964,977	0	0	12,123,995
1982	2,955,702	2,500,000	0	12,579,697
1983	2,754,091	0	0	15,333,788
1984	2,418,345	0	0	17,752,133
1985	2,332,776	0	0	20,084,909
1986	6,495,323	0	0	26,580,232
1987	13,600,701	0	0	40,180,933
1988	7,456,364	17,368,725 [b]	0	30,268,572
1989	2,341,843	1,219,691 [c]	9,478,000 [d]	21,912,724
1990	3,030,016	695,450	0	24,247,290
1991	6,222,531	2,925,429	0	27,544,392
1992	2,737,242	1,174,655	0	29,106,978
1993	2,979,254	238,130	0	31,848,102
1994	3,192,211	1,962,549	0	33,077,764
1995	2,721,197	647,138	0	35,151,823
1996	3,391,094	1,482,396	0	37,060,522
1997	3,631,783	1,520,219	0	39,172,086
1998	5,426,979	1,107,501	0	43,491,564
Total	85,811,447 [e]	32,841,883 [e, f]	**$9,478,000** [g]	43,491,564 [h]

[a] CXB = (previous year's CXB + departmental upfront payment) - (USBR + General Fund Reimbursements)

[b] USBR paid an additional $5,111,831 as interest in 1988, not shown in the table.

[c] USBR paid an additional $607,175 as interest in 1989, not shown in the table.

[d] Under State Assembly Bill 1442, the General Fund paid 20% of the Department's upfront payment through June 1988, amounting to $9,478,000. This payment includes $6,643,600 for recreation project purpose share of 14%.

[e] Does not include USBR upfront payments for staff and other direct costs.

[f] USBR paid 39.4% of the total departmental upfront payment.

[g] General Fund paid 11.8% of the total departmental upfront payment.

[h] The Department paid 48.7% of the total departmental upfront payment.

Information in this chapter was contributed by the Environmental Services Office, the Division of Operations and Maintenance, and the Division of Planning and Local Assistance.

Chapter 5

Local Assistance Programs

Watering of crops

Significant Events

- The Agricultural Water Management Council grew to 39 member agencies serving 3.3 million irrigated acres.The Department is a signatory to the Memorandum of Understanding that created the council.
- The Department's California Irrigation Management Information System expanded to 98 weather stations in 1998 and data was placed on the Internet.
- The passage of the Safe, Clean, Reliable Water Supply Act of 1996 (Proposition 204) provided funding for water conservation, groundwater recharge, new local water supply, and local projects programs that assist local agencies, including State Water Project contractors.
- In late 1996, the San Joaquin Valley Drainage Implementation Program in cooperation with local entities and the University of California began implementation of an Action Plan that updates the 1990 Drainage Management Plan (nicknamed Rainbow Report due to the color of its cover). In 1998, the SJVDIP continued to work with University scientists and local districts on eight technical reports and three local district reports evaluating drainage management options. The local reports identify local projects to resolve drainage problems. The 1996 Act also provided funding for drainage reuse projects.
- The Department supported the development of a training program to certify urban water conservation specialists. The first classes and certification tests will be held in January 1999.
- The *Water Conservation News* continued to be the primary water conservation outreach newsletter.

Through the Division of Planning and Local Assistance, the Department of Water Resources manages Water Use Efficiency, the Davis-Grunsky Act, Agricultural Drainage, Environmental Impact Document Review, and Water Conservation Bond Law programs and participates in several other programs that assist local agencies and benefit State Water Project contractors.

Davis-Grunsky Act Program

The Davis-Grunsky Act, authorized in 1960 as part of the Burns-Porter Act, provides construction loans for local domestic water projects and agricultural water conservation projects. It provides grants for recreation and fish and wildlife enhancement. Loans and grants may also be given to rehabilitate a dam and reservoir.

The Department's ongoing administration of the program provides oversight of the 32 recreation grant projects to ensure compliance with the contracts. Administration costs are recovered from the revenues provided by the repayment of Davis-Grunsky loans. The recreation grant contracts are being amended to reflect actual facilities constructed and the modification of the Department's function of fee oversight.

In this reporting period, the Davis-Grunsky Act Program funded two activities:

Big Bear Municipal Water District. Phase II repairs of Bear Valley Dam, San Bernardino County, continued to await the California Department of Transportation's actions to construct the required replacement road downstream of the dam. The $380,000 of Davis-Grunsky grant contract funds approved for Phase II construction remained available to the district.

Littlerock Creek Irrigation District/Palmdale Water District. The Department's audit and disbursements were completed for the $3 million grant approved to restore Littlerock Dam and Reservoir in Los Angeles County. The recreational facilities associated with the project are complete.

Water Use Efficiency

The Department's California Irrigation Management Information System expanded to 98 weather stations in 1998 and current data was put on an Internet site. The Department provides reference evapotranspiration information to several local agencies. Requests for information from the CIMIS database and web site numbered more than 5,000 each month.

The Department supported the development of a training program to certify urban water conservation specialists. The American Water Works Association California-Nevada Section is scheduled to present the first classes and certification tests at Conserv 99 in January 1999. As a cosponsor and steering committee member, the Department participated in the preparation of Conserv 99. This prestigious conservation conference, held every 3 years, is scheduled to be in California for the first time. It will be held in Monterey from January 31 to February 3, 1999.

The *Water Conservation News* continued to be the primary water conservation outreach newsletter. The quarterly publication reaches more than 8,000 California subscribers.

Agricultural Drainage Program

The Department continued to participate in the multiagency San Joaquin Valley Drainage Implementation Program. Four State and four federal agencies sponsor SJVDIP, with the Department as the lead agency. The Department provides management, staff, and contributes funding. During December 1996, the program's Management Group approved in concept a "Proposed Action Plan," which was advanced by an

association of local districts, the University of California, and the California Department of Food and Agriculture. The intent of the Proposed Action Plan is to update the 1990 Management Plan and pursue voluntary implementation of the recommended options. The Action Plan has three stages.

The first stage consisted of two concurrent, coordinated, yet independent tasks. First, subarea committees assessed the feasibility of adopting the management recommendations proposed in the management plan and prepared reports on San Joaquin Valley drainage problem areas. Second, a set of technical committees evaluated the technical and economic management options.

During the second stage, an ad hoc Coordination Committee will synthesize the information from the first stage into a report and, based on technical and economic considerations, identify interactions and trade-offs among management options and develop a set of recommendations. The Technical Committee and subarea reports are expected to be completed by February 1999. The ad hoc Coordination Committee plans to prepare a final report to SJVDIP by January 2000.

The third stage will use the recommendations formulated during the second stage and identify acceptable mechanisms to encourage the adoption and voluntary implementation of the updated management plan.

Shallow water tables, toxic trace elements, and high salinity threaten agricultural productivity and environmental quality. The Department has a responsibility to engage in activities to ameliorate the problems associated with irrigated agriculture. Salinity buildup on the west side and the lower parts of the Sacramento Valley is gradually taking its toll to destroy agricultural lands. The SJVDIP Action Plan and the cooperative effort initiated among the parties are necessary to resolve drainage problems. The Department will participate in this effort, assist the local districts and work with other agencies, and play a major role in collecting necessary data, developing and transferring technologies, identifying research needs, and helping districts and growers implement the drainage management options. Information on SJVDIP and its reports can be found on the Program Internet site located on the Department's Division of Planning and Local Assistance.

Proposition 204 transferred $6.1 million from SWRCB to the Department of Food and Agriculture for developing methods of agricultural drainage water reuse. DFA has asked the Department to conduct the necessary studies. The Department expects to complete the interagency contract and begin the work as soon as funding is made available to the Department. This program is closely coordinated with SJVDIP.

Drainage Monitoring and Evaluation

The Department continues to participate in a cooperative program with the U.S. Bureau of Reclamation and the Central Valley Regional Water Quality Control Board. This information system provides local, State, and federal agencies with real-time projected flow and salinity data to assist in managing drainage releases to the San Joaquin River. The initial funding for this program was supplied by USBR. A proposal to CALFED for funds to extend the program 2 years is being developed.

The Department continued to monitor shallow groundwater levels and electrical conductivity data. Each year this data is assembled in an annual report that provides information on shallow groundwater conditions. To help identify problem areas, these reports include contour maps of electrical conductivity and depth to shallow groundwater. The Department collected drainage water flow data and water quality data from about 30 tile drainage system sumps.

The Department continued to provide assistance with monitoring activities for an integrated on-farm drainage management project in western Fresno County. IFDM was developed to investigate and demonstrate salt management of irrigated farmland. The Department collected level and water quality data for shallow groundwater along with volume and water quality data for the irrigation and drainage water.

On-Farm Drainage Reduction and Reuse Program

The Department's On-Farm Drainage Reduction and Reuse Program provides technical assistance, information, and other resources to all growers and

irrigators. The Program helps irrigation districts and growers apply irrigation water efficiently, reducing deep percolation and drainage water from the immediate on-farm source, while providing a sustainable soil environment by maintaining salt balance in the crop root zone.

The program objective is being achieved through on-farm demonstration projects, studies, research, and educational training and workshops. Workshop topics include irrigation scheduling and management, including upgrading, maintenance, operations, and performance, advances in irrigation technology, irrigation system evaluation, drainage reuse, and salinity management. These activities help improve and advance irrigation management, fine tune the performance of irrigation hardware, and increase the educational level of growers and irrigators.

In 1998, final reports focusing on the management of trace elements in Integrated On-Farm Drainage Management Systems were submitted for two projects:

- *Selenium Management in IFDM Systems Through Volatilization*; and
- *Boron Accumulation and Toxicity in IFDM Systems*

Staff is presently involved in two major activities:

- management of six in-progress contracts; and
- work on SJVDIP Activity Plan and technical committees.

Management of Six In-Progress Contracts. In-progress contracts for research and demonstration projects, and contracts for workshops, are designed to disseminate state-of-the-art irrigation technologies and management practices to reduce and manage drainage water. The following contracts were developed from a Request for Proposals process initiated in 1996-97, which was targeted for State water contracts areas. The contracts in-place or under development in 1998 include:

- *Integrated Management of Irrigation and Shallow Groundwater*—field demonstration at Westlake Farms of irrigation management techniques to optimize crop use of shallow groundwater.
- *Lost Hills Drainage Reuse Trial*—a small trial to determine if drainage water can be reused on selected crops, such as pistachios, and incorporated into the District's drainage water management programs.
- *Lost Hills Preirrigation Drainage Reduction*—field demonstration of sprinkler/furrow irrigation management for pre-irrigation drainage reduction.
- *Pond-Shafter-Wasco Mobile Lab*—program to assist growers with irrigation system evaluations to improve distribution uniformity and irrigation efficiency.
- *Pond-Shafter-Wasco Irrigation Training Workshops*—irrigation training workshops conducted in both English and Spanish for growers and field workers.
- *Center for Irrigation Technology Irrigation/ Drainage Management Workshops*—training and educational workshops conducted on recent advances in irrigation and drainage management. Conducted at California State University, Fresno.

Work on SJVDIP Activity Plan and Technical Committees. Staff are helping the SJVDIP coordinator execute the Activity Plan update of the 1990 SJVDP Drainage Management Plan (nicknamed Rainbow Report due to the color of its cover). Staff have participated in eight Technical Committees, specifically the Source Reduction Technical Committee and the Drainage Reuse Technical Committee, and contributed to the writing of the committees' reports. Final reports are expected to be issued in early 1999.

Drainage Treatment

The Department continued to investigate technologies to treat agricultural drainage water. Testing at the multiagency Adams Avenue drainage treatment test was completed in November 1995. The principal activity was bacterial selenium reduction/removal tests, using anaerobic sludge blanket reactors, fluidized bed reactors, and a packed bed reactor. Slow sand filtration was evaluated as a final polishing step. Operation data and results were compiled for a summary operations report. Cleanup of the Adams site was completed in November 1998. Removal of the remaining salts and sediments at the

Los Banos Demonstration Desalting Facility was completed in December 1998.

Other activities included investigation of antifouling and antiscaling alternatives for low-pressure reverse osmosis membranes at the University of California at Los Angeles, continued support of a cooperative investigation into the use of wetlands for selenium removal at Tulare Lake Drainage District, investigations of processes for concentrating and purifying drainage salts, and opportunities for marketing harvested salts.

Planned activities include demonstrations in several drainage areas of pilot-scale reverse-osmosis treatment plants for the antifouling and antiscaling alternatives developed at UCLA; demonstration of alternative thermal gradient solar ponds for drainage water concentration, safe storage, and energy production; and field demonstrations of techniques for concentration and harvesting of drainage salts.

Evaporation Ponds

Operators of the agricultural evaporation ponds are operating under the waste-discharge requirements as adopted by the Central Valley Regional Water Quality Control Board in August 1994. Clean wetlands provide compensation for operation of the evaporation ponds; pond management for some systems has changed; and most required structural modifications have been completed at the evaporation basins. Researchers funded through the Department's Evaporation Pond Investigation developed most of these mitigation procedures. As required, the pond operators compiled draft progress reports for the first 3 years of implementation. CVRWQCB has reviewed these reports for adequacy and will prepare modifications to the waste-discharge requirements if needed. The Department will assist CVRWQCB in assessing the biological implications of any proposed modifications.

Petitions filed with the State Water Resources Control Board acted to strengthen the waste discharge requirements of CVRWQCB. SWRCB held hearings on these petitions and remanded the EIRs of four operators back to CVRWQCB for further environmental assessment. One operator has since settled outstanding issues and the other three agreed with the CVRWQB to rewrite their EIRS. Administrative drafts of the EIRs have been completed and reviewed by the operators. CVRWQB requested the Department's assistance in reviewing the comments of the operators along with input from California Department of Fish and Game and the U.S. Fish and Wildlife Service. This process is continuing and public drafts of the EIRs should be released in 1999.

The Department continues to fund and coordinate research on the evaporation ponds. A study by the Biological Resource Division to analyze shorebird feeding behavior has been completed and a final report is due in the summer of 1999.

The Department continues its studies at Rainbow Ranch evaporation basin in Kern County. Based on studies that the Department and USFWS conducted in the past, a relationship between water-borne selenium and selenium concentrations found in eggs was described for the evaporation basins. For the last few years, the selenium levels in shore bird eggs at Rainbow Ranch were lower than expected. Initial studies determined that, at times, the cells of these develop both thermal and salinity stratifications. The stratification of the ponds may be associated with the low levels of egg selenium. The linkage to egg selenium levels and the conditions that result in stratification remains to be determined.

Environmental Impact Documents Review

The Environmental Review Section in the Division of Planning and Local Assistance screens State Clearinghouse documents and circulates SWP-related materials for review by the Department's four districts, as well as the divisions of Planning and Local Assistance, Operations and Maintenance, and Engineering. In addition, other divisions and offices are notified of activities and are requested to comment when their expertise is required.

Some environmental impact documents handled by the State Clearinghouse concern proposed activities that would affect the SWP. State Clearinghouse documents are regularly reviewed to identify any public safety or liability issues arising from the proposed activities.

From January through December 1998, about 2,900 documents were screened by the Environmental Review section, with 368 referred for detailed review. O&M received 80 of these referrals. The State Water Project Analysis Office received 15 referrals, and the Office of State Water Project Planning received 1. In addition to formal referrals, 316 informal referrals were made to departmental staff. These documents were referred to staff for information rather than comment, with some of the documents formally referred to other departmental staff.

Of the documents submitted for formal review, about 15 percent generated written comments that were submitted to the lead agency. They included safety and water supply issues, encroachment on physical facilities, and water quality issues. Additional departmental actions involving such items as encroachment permit submittals and informal comments took place, but cannot be tracked by the Environmental Review Section.

Since 1995, weekly summary reports on documents received from the State Clearinghouse are available by e-mail, increasing the report's availability and speed of distribution. About 115 requests from departmental staff during 1998 were related to the distribution of this document. In addition, Environmental Review Section staff filled three requests from SWP contractors.

During 1998, the Environmental Review Section tracked documents related to development along the California Aqueduct, water transfers, and wastewater treatment in the Delta.

Water Conservation Bond Laws

To assist local agencies in obtaining financing for their water management programs, California voters approved four bond laws between 1984 and 1996 that authorized the Department to provide low interest loans and grants to fund project feasibility studies or construction activities.

The Clean Water Bond Law of 1984 (Proposition 25) authorized $10.5 million for water conservation projects; the Water Conservation and Water Quality Bond Law of 1986 (Proposition 44) authorized $75 million for water conservation and groundwater recharge projects; the Water Conservation Bond Law of 1988 (Proposition 82) authorized $60 million for water conservation, groundwater recharge, and new local water supply improvements; the Safe, Clean, Reliable Water Supply Act authorized $55 million for water conservation, groundwater recharge, and local water supply projects. The Act also authorized about $6 million for Department of Food and Agriculture for drainage reuse studies and programs. Since then, DFA has requested the Department to administer the $6 million and conduct the necessary projects. In 1998, planning was underway to begin the transfer of funds to the Department.

Construction loans are available for up to $5 million per project, with repayment up to 20 years at reduced interest rates for most programs. Proposition 204 provided grants for local water supply feasibility studies and a single construction grant for a groundwater recharge project. Among other approval criteria, applicants for this funding must demonstrate that project benefits exceed project costs. Typical projects fall under the following three categories:

Water Conservation

- improvements to, or replacement of, distribution and storage systems;
- lining and piping ditches;
- water meters; and
- water recycling distribution systems.

Groundwater Recharge

- land and facilities for new artificial groundwater recharge; and
- expansion of existing artificial groundwater recharge facilities.

Local Water Supply/Local Projects

- new conveyance and/or storage facilities;
- groundwater recharge extraction facilities, well-field development; and
- desalination (ocean or brackish groundwater recovery).

Table 5-1, organized by project type, summarizes the number of projects and funds committed for each of the four bond laws.

Table 5-1
Water Conservation Bond Laws Projects and Funding
(Millions of Dollars)

Bond Law	*Type of Project*	*Number of Projects* [a]	*Funding* [a]
Clean Water Bond Law of 1984	Water Conservation	7	9.70
Water Conservation/Water Quality Bond Law of 1986	Water Conservation	23	38.60
	Groundwater Recharge	10	28.00
	Subtotal	*33*	*66.60*
Water Conservation Bond Law of 1988	Water Conservation	6	13.50
	Groundwater Recharge	8	24.30
	Local Water Supply	4	9.00
	Subtotal	*18*	*46.80*
Safe, Clean, Reliable Water Supply Act	Water Conservation	0	0.00
	Groundwater Recharge	1	5.00
	Local Water Supply	1	0.15
	Subtotal	*2*	*5.15*
Subtotals	*All Water Conservation*	36	61.80
	All Groundwater Recharge	19	57.30
	All Local Water Supply	5	9.15
Total	**All Projects**	**60**	**128.25**

[a] Construction and feasibility loan commitments as of 12/31/98.

Information in this chapter was contributed by the Division of Planning and Local Assistance.

Chapter 6

Legislation and Litigation

Governor's Office, early 1900s

Significant Events

- SB 1765 (Peace) Colorado River Management Program (Chapter 813, Statutes of 1998) appropriates a total of $235.3 million: $235 million to the Department of Water Resources for implementation of the California 4.4 Plan developed by the Colorado River Board, and $300,000 to the Salton Sea Authority for a study. Of these funds, $200 million is for lining the All American Canal and the Coachella Branch of the All American Canal by December 31, 2006; $35 million is to finance the installation of recharge, extraction, and distribution facilities for groundwater conjunctive use programs necessary to implement the 4.4 Plan.
- SB 1075 (Johnston) Delta Protection Commission (Chapter 584, Statutes of 1998) extendsthe Delta Protection Commission to January 1, 2010, and authorizes the commission to facilitate the implementation of any joint habitat-restoration programs within the primary zone of the Delta.

The Department of Water Resources' Assistant Director for Legislation monitors State and federal legislation introduced or enacted, including bills or laws that could impact the State Water Project. Similarly, the Office of the Chief Counsel tracks litigation of potential significance to the SWP and manages litigation involving SWP operations.

Legislation

SB 1765 (Peace) Colorado River Management Program (Chapter 813, Statutes of 1998)

SB 1765 appropriates a total of $235.3 million: $235 million to the Department for implementation of the California 4.4 Plan developed by the Colorado River Board and $300,000 to the Salton Sea Authority for a study. Of these funds, $200 million is for lining the All American Canal and the Coachella Branch of the All American Canal by December 31, 2006; $35 million is to finance the installation of recharge, extraction and distribution facilities for groundwater conjunctive use programs necessary to implement the 4.4 Plan.The lining of the canal is contingent upon the following: (1) completion of a study of seepage and subsurface inflows to the Salton Sea from the All American Canal and the Coachella Branch of the Canal; (2) completion of environmental documentation and permits required by the California Environmental Quality Act and the National Environmental Policy Act for the lining of the canals; and (3) a finding by the Director of the Department of Fish and Game that the canal lining avoids or mitigates impacts on the fisheries and other wildlife.

SB 1075 (Johnston) Delta Protection Commission (Chapter 584, Statutes of 1998)

SB 1075 extends the Delta Protection Commission to January 1, 2010, and authorizes the commission to facilitate the implementation of any joint habitat-restoration programs within the primary zone of the Delta.

Litigation

As of December 31, 1998, the Department was involved in a number of court cases related to management of the SWP. In addition, the Department monitored other cases that could significantly impact management of the SWP.

San Luis and Delta-Mendota Water Authority v. United States, et al.

On November 12, 1997, the San Luis and Delta-Mendota Water Authority filed a lawsuit in federal district court for injunctive relief against the United States for misinterpretation and misapplication of the Central Valley Project Improvement Act. The plaintiffs have challenged the legality of the U.S. Department of the Interior's November 20, 1997, *CVPIA Final Administrative Proposal on Management of Section 3406(b)(2)Water,* in which DOI sets forth its plan for implementing the so-called "(b)(2)" section of the CVPIA. The water districts claim that the administrative proposal fails to account for the water as required by the CVPIA and is subject to NEPA. In contrast, environmental groups also filed a lawsuit against the United States, claiming that the proposal fails to properly account for the water, that the proposal fails to dedicate sufficient water to implement (b)(2), and that the U.S. misinterpreted its authority in permitting reuse of CVP yield. The two cases have been consolidated. In November 1998, plaintiffs submitted motions for partial summary judgement in preparation for a hearing January 1999.

Planning and Conservation League, Plumas County, and Santa Barbara Citizens Planning Association of Santa Barbara County v. Department of Water Resources and Central Coast Water Authority

The Planning and Conservation League filed a lawsuit on December 27, 1995, against the Department and Central Coast Water Authority, challenging CEQA compliance for the Monterey Amendment. PCL amended the complaint February 13, 1996, alleging that the Department could not legally transfer the Kern Water Bank to Kern County Water Agency as part of the Monterey Amendment.

After a hearing held May 17, 1996, a Sacramento County Superior Court judge ruled in favor of the Department and CCWA on PCL's complaint and dismissed the lawsuit. With regard to the CEQA causes of action, the court ruled that the Department should have served as lead agency, but that this was a harmless error, not requiring the preparation of a new environmental impact report. The court also ruled that PCL had failed to join indispensable parties in the lawsuit, including Metropolitan Water District of Southern California and KCWA, in its cause of action to enjoin the transfer of the KWB. On August 15, 1996, judgment was entered in favor of the Department and CCWA.

PCL appealed the decision to the Third District Court of Appeal. The appeal addresses whether the Superior Court correctly ruled that the SWP contractors are indispensable parties and whether CEQA was complied with. Briefing is complete and the parties await the Court of Appeal's decision.

Southern California Bass Council, et al. v. State of California

In late November 1994, the Southern California Bass Council, the Sierra Club, and the Audubon Society filed a CEQA lawsuit against the Department, challenging the Department's Mitigated Negative Declaration prepared for the reconstruction of the intake tower at Silverwood Lake. The Department was directed by the Federal Energy Regulatory Commission to replace the existing intake tower to the San Bernardino Tunnel because the existing tower did not meet current seismic standards. The petitioners claimed the Department's environmental documentation did not provide sufficient mitigation for adverse effects on the environment, including impacts on fisheries and the bald eagle.

At an April 1995 hearing in San Bernardino Superior Court, Judge John Kennedy, Jr., ruled that the Department's mitigation measures were indeed sufficient to minimize any significant impacts on the environment. The ruling validated the Department's plans to mitigate possible adverse effects on fish and wildlife resources, including the bald eagle, and recreation at the lake.

In June 1995, the petitioners appealed the trial court judgment. No order for stay (to prevent work from proceeding) was filed, and construction at Silverwood began in September 1995. Work on replacement of the intake tower was substantially completed by May 1997, and the lake was returned to its preproject level.

On October 17, 1996, the Court of Appeal affirmed the Mitigated Negative Declaration in all respects but one. As to fishery mitigation, the appellate court held that the Mitigated Negative Declaration should have included either a commitment to the specific nature and extent of restocking the fishery or specific standards under which the Department and the California Department of Fish and Game would determine the nature and extent of restocking.

Petitioners then filed a petition for review with the California Supreme Court seeking to invalidate the entire Mitigated Negative Declaration. On January 22, 1997, the California Supreme Court denied the petition for review, and jurisdiction was returned to the Superior Court. A hearing was held in San Bernardino Superior Court on May 2, 1997, and the Department presented its Fishery Mitigation Plan. Further briefing occurred on the merits of the plan, and oral argument was postponed to January 30, 1998.

On January 30, 1998, the parties appeared in San Bernardino Superior Court for a hearing on remand from the Court of Appeal. Judge Kennedy approved the Department's fishery mitigation plan as providing sufficient performance criteria for mitigating the project's significant effects on the fishery at Silverwood. The original mitigation plan included three

primary mitigation measures: (1) fish macro and micro habitat enhancement; (2) fish population studies through the year 2001; and (3) a one-time fish stocking if the fishery has not recovered by the end of 2001. On June 5, 1998, the court awarded plaintiffs fees and costs in the sum of $146,488. The court further ordered the Department to file a mitigation status report on January 15, 1999, and for the parties to present oral argument.

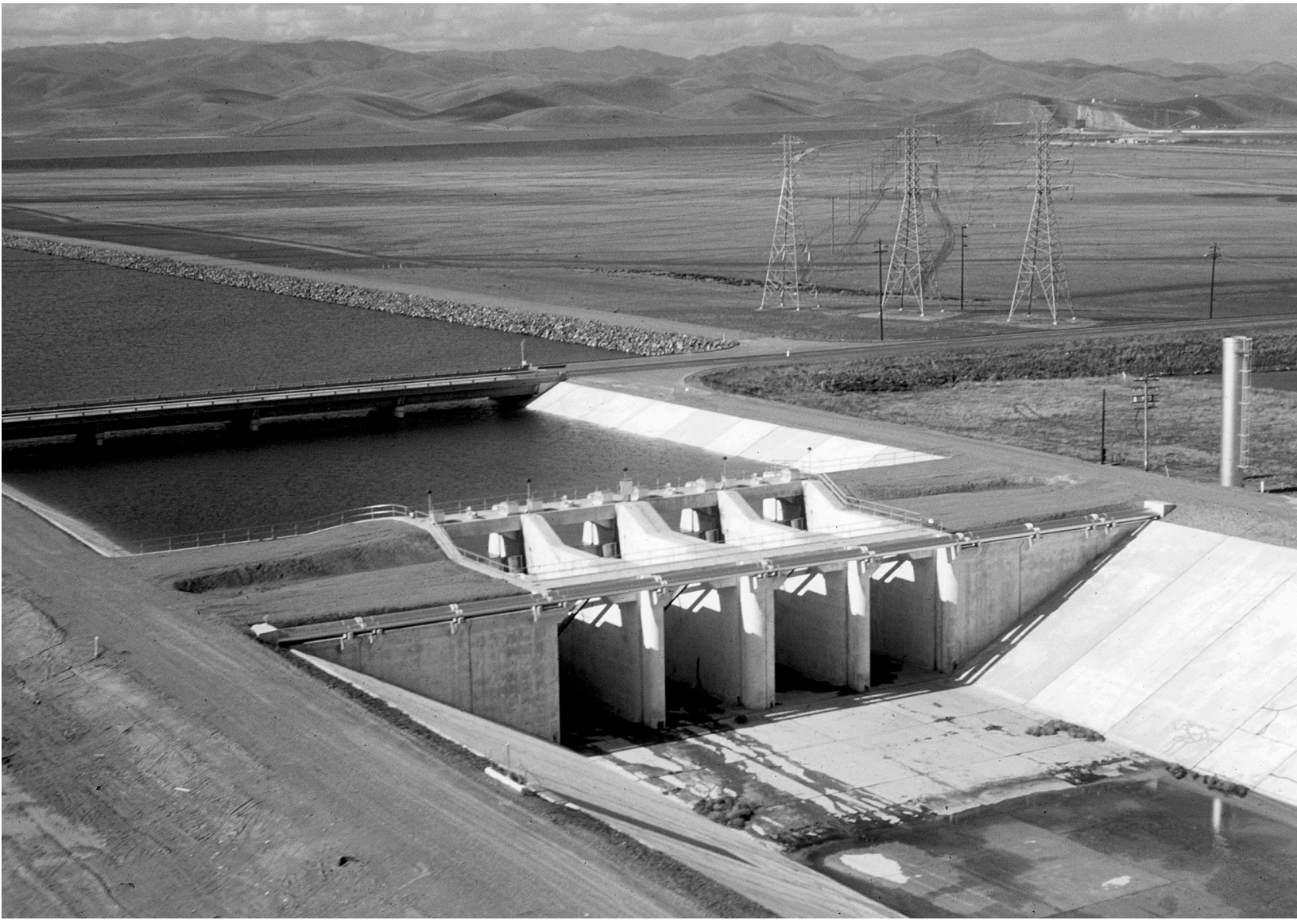
City of Barstow v. City of Adelanto

This action is a stream/groundwater adjudication for the Mojave River Basin. The groundwater adjudication portion of the litigation, to which the Department is not a party, is now before the California Supreme Court, after the trial court decision upholding the negotiated settlement was reversed by the Fourth District Court of Appeal on June 1, 1998.

Information for this chapter was contributed by the Assistant Director for Legislation and the Office of the Chief Counsel.

Chapter 7

Storage and Delivery Capabilities and Water Supply Development



Water control gates prior to water release at O'Neill Forebay

Significant Events

- The State Water Resources Control Board began public hearings on July 1, 1988, to consider alternatives to implement the water quality objectives in the 1995 Water Quality Control Plan. As of December 21, 1998, the board heard 40 days of testimony, and phases 1 through 5 were completed.

To deliver the full annual water entitlements specified in water service contracts, the Department of Water Resources will need to construct additional storage and delivery facilities as part of the State Water Project, as well as maintain and improve the reliability of all SWP supplies. However, finding environmentally and technically suitable projects and satisfying many complex environmental procedures, laws, and regulations, present two significant challenges in the planning and developing of new facilities. Many environmental concerns center on the effects that additional storage and delivery facilities may have on the water quality and environment of the Sacramento-San Joaquin Delta. The Delta is the critical link in the SWP conveyance system. As such, developing additional SWP facilities depends on resolution of Delta conflicts and solutions currently being outlined by CALFED.

In 1995, the CALFED Bay-Delta Program began developing a comprehensive, long-term solution for the Delta. The program is a component of a process defined in the State-federal framework agreement signed in June 1994. This agreement calls for a cooperative and coordinated process to solve long-term water quality and ecosystem problems in the Bay-Delta Estuary. The signers of the agreement, known collectively as CALFED, became responsible for setting water quality standards and developing long-term solutions for fish and wildlife, water supply reliability, flood control, and water quality problems in the estuary.

The Department has vigorously supported this effort as a means of developing and managing the State's water resources to benefit its citizens and the environment and to meet the water delivery commitments of the SWP. The Department is also developing a planning strategy for the SWP to lay the groundwork for the development of additional SWP water supplies. The progress of the planning strategy depends on the evolution of the CALFED Bay-Delta Program and the support of SWP contractors.

SWP Planning Strategy

Because of the need for additional water supplies for the SWP, along with the impacts of new constraints on Delta exports, the Department initiated efforts in 1994 to formulate a new planning strategy for the SWP Future Water Supply Program. The Department held initial meetings with all interested SWP contractors to discuss regional water management issues, requirements for SWP supply reliability, and strategies for implementing new demand reduction and supply development projects.

The end product of the SWP planning strategy may be a detailed plan comprised of water-demand reduction and supply-enhancement programs and their implementation schedules, or a general plan recommending a framework of options for SWP contractors. The plan would specify how the SWP would meet interim (10-year planning horizon) and long-term (year 2020 and beyond) water demands of SWP service areas, according to service-area-specific ranges of desired reliability.

Supply Reliability Activities

Increased emphasis was given to maintain and improve the reliability of future SWP supplies. These activities formed the core of the SWP planning strategy.

Transfer and Exchange Evaluations

The evaluation of the effects of proposed non-SWP water transfers on the SWP was done in cooperation with the State Water Project Analysis Office, Operations and Maintenance, and the Office of the Chief Counsel. This team developed formal responses on specific issues or programs. Coordination of this effort in the Office of SWP Planning ensured timely identification and evaluation of significant projects. The team identified and evaluated water transfer proposals, water acquisitions by the U.S. Bureau of Reclamation and other water agencies, and proposed water-right settlement agreements for potential impacts to the SWP. Emphasis on early intervention tailored the proposals so as to minimize adverse effects or maximize benefits to the SWP. The team monitored the USBR contract renewal process to evaluate potential impacts. These activities helped the Department to understand the potential cumulative impacts of other agencies' actions on the SWP and to proactively address these impacts.

The team also explored potential transfer options available to the SWP and individual contractors. Analysis of contractor profiles helped the Department facilitate transfers and exchanges between individual contractors. In addition, the Department coordinated its participation on the CALFED Transfer Agency Group and the Bay-Delta Advisory Committee Transfers Workgroup.

Water Supply Contract Evaluation

This activity focused on evaluating existing SWP water supply contracts to identify possible modifications to improve reliability. Contract amendments were developed to increase flexibility for individual contractors while protecting the water supply of other contractors. Potential operational changes to increase flexibility will be evaluated.

Contractor Profiles

The SWP Planning Committee developed preliminary contractor profiles. These profiles provide data on contractors who want to develop additional future SWP supplies. The Committee worked with individual contractors to determine specific water supply needs and identify potential programs and/or operational changes to meet those needs in a cost-effective manner.

Assurance Demonstration Project

This continuing effort developed, in coordination with CALFED, a conjunctive-use project to identify and implement locally acceptable assurances that significant third-party impacts can be mitigated. This project augmented the ongoing Sacramento Valley Conjunctive-Use Study.

Watershed Management

This effort, which evaluated the state of the Feather River watershed above Lake Oroville, identified actions that can be taken within the watershed to increase base-flow runoff and reduce sedimentation. The effort explored ways to improve local water supplies without adversely affecting SWP supply or operations. Initial activities included installing monitoring equipment and gathering pertinent data on streamflows, water quality, erosion, and land use. The work gained strong local support.

SWP Bay-Delta Proceedings—1998 Activities

The current Bay-Delta Water Rights hearing is the latest in a series of hearings over the past 30 years before the State Water Resources Control Board to establish water quality objectives in the Delta to protect urban, agricultural, and fish and wildlife water uses. In 1995, SWRCB issued a water quality plan for the Delta. The plan would implement water quality flow objectives in the Delta, objectives for the Suisun Marsh, salinity-control actions in the San Joaquin Basin, objectives for the south Delta, including dissolved oxygen objectives, and combined use of SWP and Central Valley Project points of diversion in the Delta. The current version of the Bay-Delta Water Rights concerns the implementation of the 1995 plan through a water right hearing.

SWRCB elected to stage the hearing in nine phases. The hearing began on July 1, 1998. As of December 31, 1998, SWRCB heard 40 days of testimony, and phases 1 through 5 were completed.

In Phase 1, SWRCB heard testimony to decide whether to extend Water Rights Order 95-6. WR 95-6 modified SWP and CVP rights expressed in Decision 1485 to make them consistent with the 1995 plan.

Phase 2 of the hearing addressed whether the San Joaquin River Agreement was a reasonable alternative for meeting the Vernalis flow and salinity

objectives. SWRCB determined that the agreement was a reasonable alternative, and that it would be compared to other Vernalis alternatives described in the draft EIR in Phase 2a.

Phase 3 of the hearing addressed the Suisun Marsh objectives. The Department, in coordination with the Department of Fish and Game and the Suisun Resource Conservation District, presented evidence in support of an amendment to the Suisun Marsh Preservation Agreement. This amendment would satisfy the projects' obligations for meeting the Suisun Marsh objectives.

Phase 4, also completed, addressed agreements involving the Mokelumne River, Putah Creek, Cache Creek, and North Delta Water Agency. The Department presented evidence in support of each of the settlements.

Phase 5 addressed south Delta agricultural objectives and the dissolved oxygen objectives for the San Joaquin River near the City of Stockton. The Department presented evidence in support of the Interim South Delta Program, which contains, as a component, the installation and operation of permanent barriers in the south Delta. The Department has proposed that this program would satisfy the Department's obligations to meet south Delta objectives. The program would improve water circulation and water levels in the south Delta.

SWRCB adopted a decision for Phase 1, but has not rendered a decision on any of the other phases. Phases 2a, 6, 7, and 8 have yet to begin. Phase 2a is scheduled to begin in January 1999, to be followed by the remaining phases. Phase 6 will address an expansion of the joint point of operations between the SWP and CVP. Phase 7 will deal with the conformity of CVP water right permits with current usage.

Phase 8 will address the responsibility of diverters upstream of the Delta that have not agreed to contribute to meeting the 1995 Water Quality Control Plan. Phase 8 is expected to be controversial. Potential alternatives discussed in the draft EIR for this phase include the current situation, in which only the two projects are obligated to meet the Delta objectives, to alternatives that shift some of the responsibility for meeting Delta objectives to upstream water rights holders besides the projects.

Coastal Branch Delivery Facilities

Phases I and II

In keeping with the Department's efforts to have appropriate water delivery facilities in place to meet demands, the Coastal Branch of the California Aqueduct was planned, designed, and constructed in two phases. The first phase was completed in the late 1960s and delivers water for agricultural use to contractors in northwestern Kern County. Phase I facilities include 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, a member of Kern County Water Agency, and Castaic Lake Water Agency (formerly Devil's Den Water District), receive water through the Phase I facilities. The second phase became operational in mid-1997 and delivers water for municipal and industrial use to Santa Barbara County Flood Control and Water Conservation District and San Luis Obispo County Flood Control and Water Conservation District.

Phase II Construction

The Phase II project was divided into six construction reaches. In early 1994, the Department began acquiring rights-of-way and obtaining the permits necessary to construct the project and then began construction of the first two reaches. Four addenda and one supplement to the final EIR were prepared to document changes in the project. With the implementation of mitigation plans, the construction of the project resulted in no significant long-term impacts. All significant impacts were short-term and were associated with construction (traffic, noise, and air quality) activities. A legal challenge to the adequacy of the supplement to the EIR was resolved in favor of the Department.

In August 1997, Phase II facilities testing was completed and commercial operation began with delivery of treated SWP water to Santa Barbara and San Luis Obispo counties. Throughout the rest of 1997 and

into 1998, the Division of Engineering worked to resolve construction claims and close out construction contracts. Minor field activities continued, such as correcting erosion problems, resolving landowner problems, and implementing mitigation items.

Water Supply Development

To meet SWP contractors' increasing need for water, the Department investigates and implements plans to augment the SWP water supply.

Environmental Policy Acts

The National Environmental Policy Act (Title 42 United States Code sections 4321-4370 [1970]) and the California Environmental Quality Act (California Public Resources Code sections 21000-21177 [1970]) require government agencies to document and consider environmental consequences of their actions in their decision-making process. NEPA states that it is the goal of 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, including a discussion of mitigation measures and alternatives, for actions significantly affecting environmental quality.

The California Environmental Quality Act is patterned after NEPA. According to CEQA, agencies are required to (1) disclose, through an environmental impact report, the significant effects proposed projects would have on the environment; and (2) search for ways to reduce or avoid environmental damage.

CEQA applies to projects directly undertaken, funded, or approved by State or local agencies. NEPA 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.

NEPA requires that mitigation measures and alternatives be disclosed to the public in the Environmental Impact Statement, but it does not generally require federal agencies to adopt such mitigation measures or alternatives. CEQA, on the other hand, does impose substantive duties on all California government agencies approving projects with significant environmental impacts to adopt alternatives or mitigation measures that they find to be feasible to substantially lessen these impacts, unless there are overriding reasons why they cannot. When a project is subject to both CEQA and NEPA, both laws encourage the agencies to cooperate in planning the project and preparing joint environmental documents.

Through the environmental review process, citizens can learn about those significant effects and, if the project is approved, the reasons for approving the project. The review process requires agencies to:

- describe the proposed project;
- identify the lead and cooperating agencies involved in the project;
- determine the scope of study with responsible agencies and/or the public;
- prepare and distribute a draft EIS or EIR;
- respond to comments received on the draft;
- prepare the final EIS or EIR;
- make findings and adopt feasible alternatives or mitigation measures to avoid significant effects, if applicable;
- adopt a monitoring plan to ensure compliance with mitigation measures; and
- prepare a list of permits required to implement the project if the project is approved.

The scoping phase, which occurs early in the review process, is particularly important because it enables government agencies to identify issues and topics to be considered when preparing the report. Information gathered in the scoping phase helps agencies identify and evaluate reasonable alternatives; identify potential environmental impacts of the project; determine data and information needed; develop a work schedule; and allocate resources for preparing and distributing the draft environmental document for public review and comment.

NEPA requires a lead agency to involve the public during scoping, while CEQA does not. CEQA, however, does encourage public involvement at this stage. Members of the public may raise issues during the scoping phase and not just after the draft environmental document is prepared. Thus, the CEQA process leads to changes in projects through the development, consideration, and adoption of alternatives or enforceable mitigation measures to avoid or reduce any potential significant adverse effects on the environment.

The Department's plans include:

- developing programs to transfer water, either through programs such as the drought water bank or transfers between SWP long-term contractors and/or other agencies, including CVP contractors;
- establishing conjunctive-use programs; and
- using SWP funds to develop local water supplies.

Supplemental Water Acquisitions

During 1994, the Department began drafting a programmatic environmental impact report for the Supplemental Water Purchase Program. This EIR, released in February 1997, described a 6-year program intended to acquire up to 400,000 acre-feet annually from willing sellers for use by participating SWP contractors. Water for the program would be secured either through direct purchases or by the purchase of water supply options. However, comments received were highly critical of the groundwater pumping component of the program. Subsequently, the groundwater pumping component was removed, leaving only reservoir storage as a possible source of water under this program. The Department continues efforts to advance the remainder of the program.

State Water Project Conveyance

The Department arranges for the temporary transfer of water through SWP facilities for SWP long-term contractors as well as for other agencies. Those transfers can take three forms: (1) water exchanges among SWP long-term contractors or among contractors and non-SWP contracting entities; (2) entitlement water transfers between long-term SWP contractors; or (3) transfers of nonproject water to non-SWP and SWP agencies.

CALFED Bay-Delta Program—Water Transfer Program

The Department actively participates in the formulation of CALFED's Water Transfer Program through the Bay-Delta Advisory Council Water Transfer Work Group and the Transfers Agency Group. The program proposes a framework of actions, policies, and processes to facilitate water transfers and further develop a statewide water transfer market. The program document will describe the relationship of water transfers to other water management actions and programs, discuss existing laws and statutes, such as Water Code Section 1810 *et seq.*, and identify issues and problems related to transfers. The document will also make recommendations to resolve these issues and suggest strategies to implement these recommendations. The Water Transfer Program is one of eight program elements being developed for CALFED's Bay-Delta Program programmatic EIR/EIS.

Conjunctive-Use Program

Conjunctive use is a set of water management techniques that store surface water underground in times of abundant supply for use in dry years, when shortages are being experienced. In general, storage would be accomplished by either direct recharge (for example, using percolation ponds) or by in-lieu recharge, with an intermittent supply of surface water provided to users normally relying on groundwater. Generally, in-lieu recharge is practiced in an agricultural setting to avoid the cost associated with treating water for municipal use on an occasional basis. Carefully implemented conjunctive-use programs can operate without causing significant adverse impacts. However, they must be carefully formulated to account for the potential effects on native vegetation and wetland habitat, fish and wildlife resources, water quality, land subsidence, and impacts to users who do not directly participate in the programs.

Conjunctive use of surface water and groundwater can provide important benefits in water management. Historically, conjunctive use grew from local efforts to manage erratic surface water supplies. These efforts led to increased recognition of the potential for conjunctive use to increase the efficiency of both local and regional water supply systems in a cost-effective and environmentally sensitive manner.

Water planners realized that conjunctive-use projects could be an important component of meeting water needs. However, plans must be carefully formulated to assure that the ability of the source areas to meet future needs is not compromised.

Joint resources could be combined for cooperative projects that would benefit both local participants and future recipients of any newly-developed water supply.

Water Code Section 1810 *et seq*.

1810. Notwithstanding any other provision of law, neither the state, nor any regional or local public agency may deny a bona fide transferor of water the use of a water conveyance facility which has unused capacity, for the period of time for which that capacity is available, if fair compensation is paid for that use, subject to the following:

(a) Any person or public agency that has a long-term water service contract with or the right to receive water from the owner of the conveyance facility shall have the right to use any unused capacity prior to any bona fide transferor.

(b) The commingling of transferred water does not result in a diminution of the beneficial uses or quality of the water in the facility, except that the transferor may, at the transferor's own expense, provide for treatment to prevent the diminution, and the transferred water is of substantially the same quality as the water in the facility.

(c) Any person or public agency that has a water service contract with or the right to receive water from the owner of the conveyance facility who has an emergency need may utilize the unused capacity that was made available pursuant to this section for the duration of the emergency.

(d) This use of a water conveyance facility is to be made without injuring any legal user of water and without unreasonably affecting fish, wildlife, or other instream beneficial uses and without unreasonably affecting the overall economy or the environment of the county from which the water is being transferred.

1811. As used in this article, the following terms shall have the following meanings:

(a) "Bona fide transferor" means a person or public agency as defined in Section 20009 of the Government Code with a contract for sale of water which may be conditioned upon the acquisition of conveyance facility capacity to convey the water that is the subject of the contract.

(b) "Emergency" means a sudden occurrence such as a storm, flood, fire, or an unexpected equipment outage impairing the ability of a person or public agency to make water deliveries.

(c) "Fair compensation" means the reasonable charge incurred by the owner of the conveyance system, including capital, operation, maintenance, and replacement costs, increased costs from any necessitated purchase of supplemental power, and including reasonable credit for any offsetting benefits for the use of the conveyance system.

(d) "Replacement costs" means the reasonable portion of costs associated with material acquisition for the correction of unrepairable wear or other deterioration of conveyance facility parts which have an anticipated life which is less than the conveyance facility repayment period and which costs are attributable to the proposed use.

(e) "Unused capacity" means space that is available within the operational limits of the conveyance system and which the owner is not using during the period for which the transfer is proposed and which space is sufficient to convey the quantity of water proposed to be transferred.

1812. The state, regional, or local public agency owning the water conveyance facility shall in a timely manner determine the following:

(a) The amount and availability of unused capacity.

(b) The terms and conditions, including operation and maintenance requirements and scheduling, quality requirements, term or use, priorities, and fair compensation.

1813. In making the determinations required by this article, the respective public agency shall act in a reasonable manner consistent with the requirements of law to facilitate the voluntary sale, lease, or exchange of water and shall support its determinations by written findings. In any judicial action challenging any determination made under this article the court shall consider all relevant evidence, and the court shall give due consideration to the purposes and policies of this article. In any such case the court shall sustain the determination of the public agency if it finds that the determination is supported by substantial evidence.

1814. This article shall apply to only 70 percent of the unused capacity.

The Department has long recognized the importance of conjunctive water-use management of California's surface and groundwater resources. Conjunctive-use management was an integral part of *The California Water Plan* (Bulletin 3) published in 1957. Since that time, the Department has continued to investigate the potential for conjunctive use. In 1992, the Department began a program to develop projects in the Sacramento Valley that could augment the supply of the SWP. During 1997 and 1998, the Department, in cooperation with local agencies, continued studies of several potential project areas in the Sacramento Valley.

American Basin. In June 1997, the Department completed a feasibility investigation for a conjunctive-use project in the American Basin area of Sutter, Placer, and Sacramento counties. The project has the potential to develop more than 50,000 acre-feet of dry-year supply through a combination of in-lieu recharge, groundwater substitution, and transfers from surface storage. The local cooperators include the Natomas Central and Pleasant Grove-Verona Mutual water companies and the Placer County Water Agency. This project forms the basis for a pilot program to evaluate a new approach to project management between the Department and its contractors. Under this approach, individual contractors are allowed the option to participate in a particular project (opt-in). All project costs will be borne by those contractors who opt-in, and they will receive all benefits from the project. Seven SWP contractors have opted to participate in the American Basin Project. The Department, SWP, and local participants are negotiating a set of principles for participation that will define their respective roles and responsibilities during the environmental compliance and permitting phases of project development.

Lower Colusa Basin. In July 1997, the Department completed a prefeasibility investigation of the conjunctive-use potential in the Lower Colusa Basin in northern Yolo and southern Colusa counties. The local cooperators in this investigation are Reclamation District No. 108, Colusa County Water District, and Yolo-Zamora Water District. The proposed project would develop up to 34,000 acre-feet of dry-year supply for the SWP, while helping alleviate problems resulting from land subsidence in the project area. Recharge would be accomplished through the development of conveyance facilities to deliver surface water to Yolo-Zamora and/or Colusa County Water District in wet years. In dry years, Reclamation District-108 would pump previously stored groundwater as part of its supply and release an equivalent amount of surface water to the SWP. The prefeasibility investigation identified significant gaps in knowledge of the groundwater system in RD-108, and subsequent work has focused on implementing an exploration program and developing a monitoring system to gather more detailed information for a feasibility study.

Butte Basin. The Department completed Phase III of its conjunctive-use investigation at the Chico M&T Ranch in November 1996. Although the project showed promise, ranch management asked that further work be postponed because of the uncertain environment created by adoption of a groundwater management ordinance in Butte County (Measure G). Additional work was premature because procedures to implement the ordinance and requirements to permit groundwater substitution activities were not clarified. The Department continued efforts to monitor the groundwater system and work cooperatively with the Butte Basin Water Users Association to establish an environment conducive to development of conjunctive-use projects. Studies indicated that the basin is physically capable of providing significant quantities of additional water through groundwater substitution in dry years, with recovery occurring during subsequent wet years. However, uncertainties remain concerning the amount of "new" water that can be developed from the hydrologic system and how to identify and mitigate potential impacts to third parties.

Yuba County. In 1998, the Department, in cooperation with Yuba County Water Agency, completed development of a groundwater simulation model for the valley floor parties of Yuba County. The model will be used to help design and evaluate options for operating the groundwater basin in conjunction with YCWA's Yuba River system and the SWP.

Local Agency Concerns. Institutions and individuals in the Sacramento Valley are faced with a confusing array of proposals and activities that are sometimes perceived as threats to their water supplies. These include the Department's conjunctive-use and water-transfer programs; CALFED's Bay-Delta program; SWRCB's Delta water-rights hearings and attempts to reach settlements as part of that process; and the activities of USBR in implementing the Central Valley Project Improvement Act, and in contract-renewal negotiations, among others. Local agencies are increasingly active in developing groundwater management programs and are asserting increased local control over water supply development and management. The Department works with local agencies and interested parties to address concerns and inform them about the potential for

conjunctive use as an element of overall resource development and management.

Local Water Supply Projects

Local projects to augment water supply may be financed with SWP funds and become units of the SWP if the Department determines that the projects are structurally, economically, financially, and contractually feasible as well as environmentally acceptable. SWP contractors benefit from increased water supplies or reduced demands resulting from the projects.

Should construction costs of the local project exceed available SWP funds, local participation in financing the construction will be required. In addition, SWP funding will not exceed actual construction costs, and the local project will not become a unit of the SWP until all participants sign an agreement.

For a project to be financed by the SWP, the Department must be assured that:

- appropriate water supply contracts will be amended;
- yield developed by a local project as a unit of the SWP will become part of the SWP yield, whether for the life of the project or for an interim period; and
- the local project will not adversely affect the costs of water deliveries to nonparticipating SWP contractors.

The Department conducts a feasibility study of local projects only when conceptual and reconnaissance reports support the project and SWP contractors agree that the project is advantageous.

At this time, no local projects are being considered by the Department.

Central Valley Project Improvement Act of 1992

The Central Valley Project Improvement Act (PL 102-575; 106 Stat. 4706) made protection, restoration, and enhancement of fish and wildlife a major purpose of the CVP. Because it requires specific water supply actions, the CVPIA directly affects the joint activities of the CVP and SWP. The act indirectly influences SWP operations by addressing several Delta environmental issues.

The CVPIA is designed to (1) protect, restore, and enhance fish, wildlife, and associated habitats in the Central Valley and Trinity River basins; (2) address impacts of CVP on fish, wildlife, and associated habitats; (3) improve operational flexibility of the CVP; (4) encourage expanded use of voluntary water transfers and water conservation; (5) contribute to efforts to protect the Sacramento-San Joaquin Delta and estuary; and (6) achieve a reasonable balance among competing demands for CVP water, including fish and wildlife, agricultural, municipal, and power uses.

In addition to imposing further limitations on new and renewed CVP contracts and encouraging voluntary transfers of CVP water, the CVPIA requires the implementation of a program to ensure that by 2002, natural production of anadromous fish will be sustainable at population levels twice the average sustained from 1967 to 1991. The CVPIA also requires the dedication and management of an additional 800,000 acre-feet of CVP yield for fish and wildlife needs.

The CVPIA also specifies measures to restore fish and wildlife and their habitat. Several measures—including installing a structural temperature control device at Shasta Dam, constructing specified Delta barriers, and acquiring supplemental wildlife refuge water—require cost sharing by the State of California. USBR is establishing guidelines and procedures to implement the CVPIA requirements. The Department works closely with USBR as these programs develop to manage any effects on SWP operations and minimize adverse impacts to threatened and endangered species.

Information in this chapter was contributed by the State Water Project Analysis Office, the Division of Planning and Local Assistance, and the Office of State Water Project Planning.

Chapter 8
Water Supply and Allocation

Bullards Bar Reservoir
in the Central Valley

Significant Events

- Water year 1997-98 was affected by a strong El Niño, which contributed to the fourth wet year in a row for Northern California.

To meet contracted obligations to the State Water Project long-term water supply contractors, the Department of Water Resources monitors precipitation, calculates runoff, and operates storage facilities as required.

During each water year, from October 1 through September 30, the Department monitors and records precipitation, runoff, and reservoir water storage.

Water Year 1997-98

Precipitation

Water year 1997-98 was the fourth wet year in a row for Northern California. The year was affected by a strong El Niño in the eastern tropical Pacific Ocean that produced above-average precipitation in California, especially the central and southern portions of the State. It was a year of big snowpacks and abundant snowmelt runoff. Figure 8-1 shows statewisde precipitation by hydrologic region.

In contrast to 1997, coastal watersheds and smaller basins generated the larger floods of 1998. New flood peaks were observed on the Pajaro River near Watsonville, the Cuyama River above Twitchell Reservoir, at Clear Lake, Farmington and Los Banos reservoirs, and on Merced area creeks. The upper Sacramento Valley was also wet; flooding was comparable to the larger floods of record, despite effective flood control operations at Shasta Reservoir. Flood runoff from major Sierra rivers, including the Feather River, was not unusually large; peak 3-day rates were near median (the rate to be expected in 1 year out of 2).

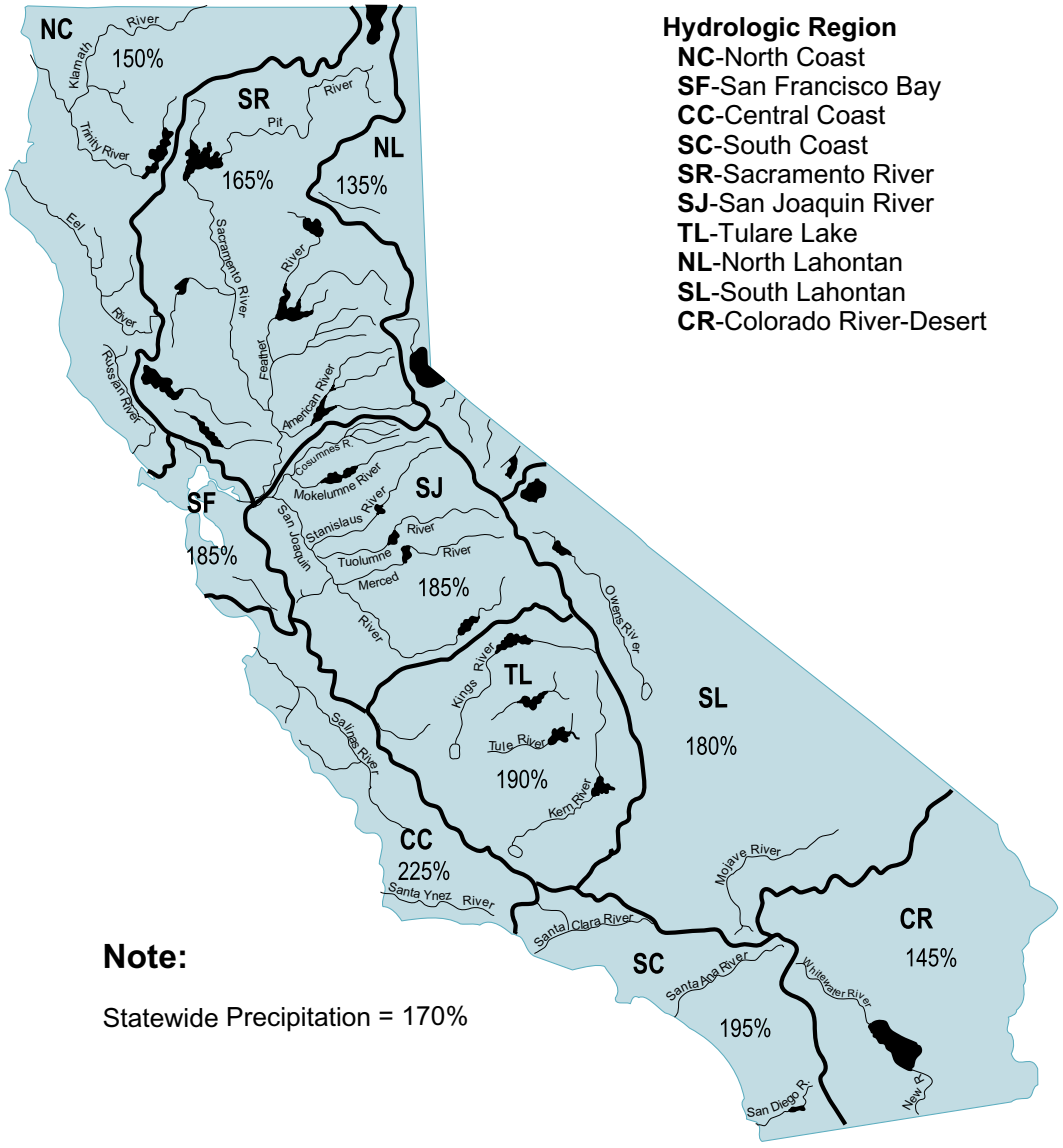
October started the water year with near-normal precipitation while November was above average, but not unusually wet. December was below average, even with some intense local storms in the South Coast region during the first weekend of the month. After a slow start in December, the winter turned wet. Both January and February were extremely wet—February precipitation was nearly three times normal. However, the February storms were relatively cool and contributed to a heavy snowpack in the mountains. Some of the largest snowpack percentages were on the ridge separating the Sacramento and Trinity river basins. With the exception of 1995, 1998 had the heaviest snowpack since 1983, another strong El Niño year. The Sacramento River system easily handles snowmelt floods because of its large rain-flood channel capacity. However, San Joaquin River system floodways are only about one-tenth as large and heavy snowmelt years tax the reservoirs and channel systems. Snowmelt in 1998 was delayed about 2 weeks, which helped to control the high San Joaquin River system runoff. The water-supply forecasts were useful for coordinating releases and operating the reservoirs to minimize snowmelt flood damage.

March and April had above-average precipitation, 135 and 125 percent of average, respectively, statewide, but were not nearly as wet as February. May was cool and wet—more typical of March weather. A surprise storm in the upper Sacramento Valley near the end of May produced moderate flood flows in the Sacramento River and the latest occurring inundation of the Sutter and Yolo bypasses observed in a flood season. June started out cool and wet, but in the middle of the month the weather turned dry and remained that way for the rest of the summer. September saw near-normal showers in the mountains.

Runoff

Runoff in water year 1998 in the Central Valley rivers was less than in 1983 (the wettest year recorded in the 20th century) or 1995. However, 1998 runoff was about 20 percent more than in 1997. Total runoff for the eight major rivers of the Sacramento-San Joaquin River system was nearly 42 million acre-feet, about 175 percent of average and the sixth wettest of record.

Figure 8-1
Statewide Precipitation by Hydrologic Region, 1997-98 Water Year, in Percentage of Average



SWP Storage

The SWP operates a complex system of 28 dams and reservoirs to collect and store water for future deliveries. Lake Oroville is the first of two primary SWP conservation facilities. Inflow to Lake Oroville comes from the Feather River.

San Luis Reservoir, in the central part of the State, is the second primary SWP conservation facility and derives its inflow from pumping at Gianelli Pumping-Generating Plant. San Luis is off-stream storage, with most water in the reservoir pumped in from late fall to early spring, temporarily stored, and then later released back to the aqueduct to meet water-contractor peaking demands in the summer months. The remaining 26 dams and reservoirs regulate the stored water supply into water delivery patterns designed to fit local needs.

Reservoir storage in the SWP at the end of the 1998 water year was 135 percent of average, compared to 95 percent in 1997. Total 1998 storage in major SWP reservoirs was 4.39 million acre-feet on September 30, about 1.2 million acre-feet more than the storage at the same time in 1997. September 30 storage at Lake Oroville was 2.8 million acre-feet, about 692,000 acre-feet more than last year. The State's share of San Luis Reservoir storage was 900,063 acre-feet, compared to 461,642 acre-feet last year. The combined storage in southern reservoirs was 662,000 acre-feet on September 30, compared to 576,000 acre-feet in the 1997 water year.

Total storage in major SWP reservoirs was about 4.4 million acre-feet at the end of calendar year 1998, compared with 3.9 million acre-feet in 1997. The State's share of San Luis Reservoir storage was about 1.07 million acre-feet, compared with 994,000 acre-feet at the same time in 1997. The combined storage in southern reservoirs was about 628,000 acre-feet on December 31, compared with 631,000 acre-feet in 1997.

The following information about these reservoirs, including amounts of unimpaired runoff to Lake Oroville and storage levels for SWP conservation and other storage facilities, is based on the 1998 water year.

Lake Oroville. Lake Oroville, the keystone of the SWP, has a maximum capacity of 3,537,580 acre-feet. Runoff from the Feather River drainage is collected and stored in the reservoir for release to the Sacramento-San Joaquin Delta through Oroville Dam, Thermalito Diversion Dam, and Thermalito Afterbay.

Lake Oroville inflow for the 1997-98 water year totaled about 6.69 million acre-feet—150 percent of average. Minimum storage occurred January 1, 1998, at 2,231,018 acre-feet—63 percent capacity. Maximum storage occurred June 28, 1998, at 3,525,895 acre-feet—about 99 percent of capacity.

See figures 8-2 and 8-3 for monthly and cumulative inflow, respectively, into Lake Oroville for calendar years 1996 through 1998.Total inflow into Lake Oroville during the 1998 calendar year was 6,957,224 acre-feet. Lake Oroville storage at the end of 1998 was 2,687,877 acre-feet. Figure 8-4 compares end-of-month storage at Lake Oroville for the 1997 and 1998 calendar years.

San Luis Reservoir. The Department and the U.S. Bureau of Reclamation operate San Luis Reservoir jointly according to operating procedures completed in June 1981. San Luis Reservoir has a normal operating capacity of 2,027,840 acre-feet. The SWP share of capacity is 1,062,183 acre-feet.

As of October 1, 1997, San Luis Reservoir contained 593,428 acre-feet—29 percent of its capacity. The SWP share was 461,642 acre-feet. By April 7, 1998, San Luis Reservoir reached its maximum storage for 1998 at 2,030,377 acre-feet—100 percent of normal maximum operating capacity. The highest end-of-month SWP share of storage was in January 1998 at 1,068,144 acre-feet (Figure 8-5) with the SWP storing some water in the vacant USBR share of storage.

Lake Del Valle. Lake Del Valle, situated off the South Bay Aqueduct, primarily stores water for later delivery in Santa Clara and Alameda counties. At the beginning of the 1997-98 water year, Lake Del Valle held 32,014 acre-feet—about 41 percent of its maximum capacity of 77,106 acre-feet. Its highest storage occurred February 8, 1998, at 53,805 acre-feet.

Figure 8-2
Monthly Inflow into Lake Oroville from Feather River, 1996-98 Calendar Years

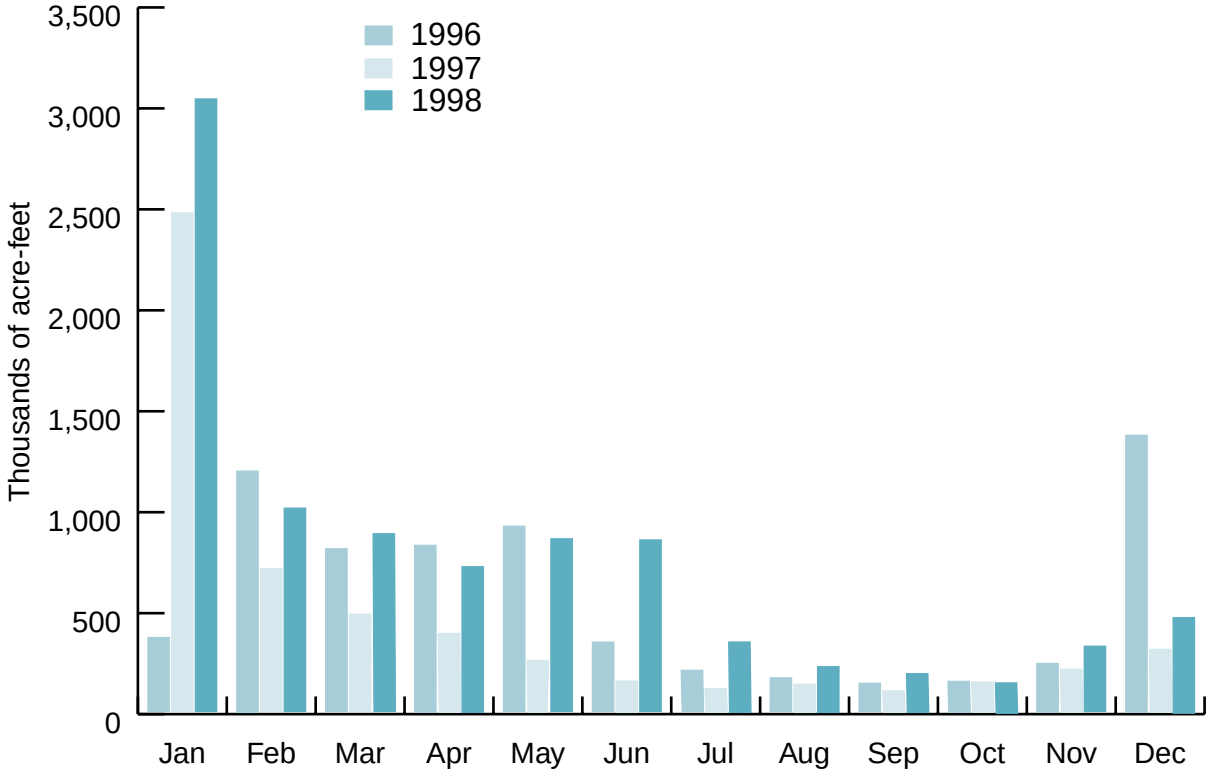


Figure 8-3
Cumulative Inflow into Lake Oroville from Feather River

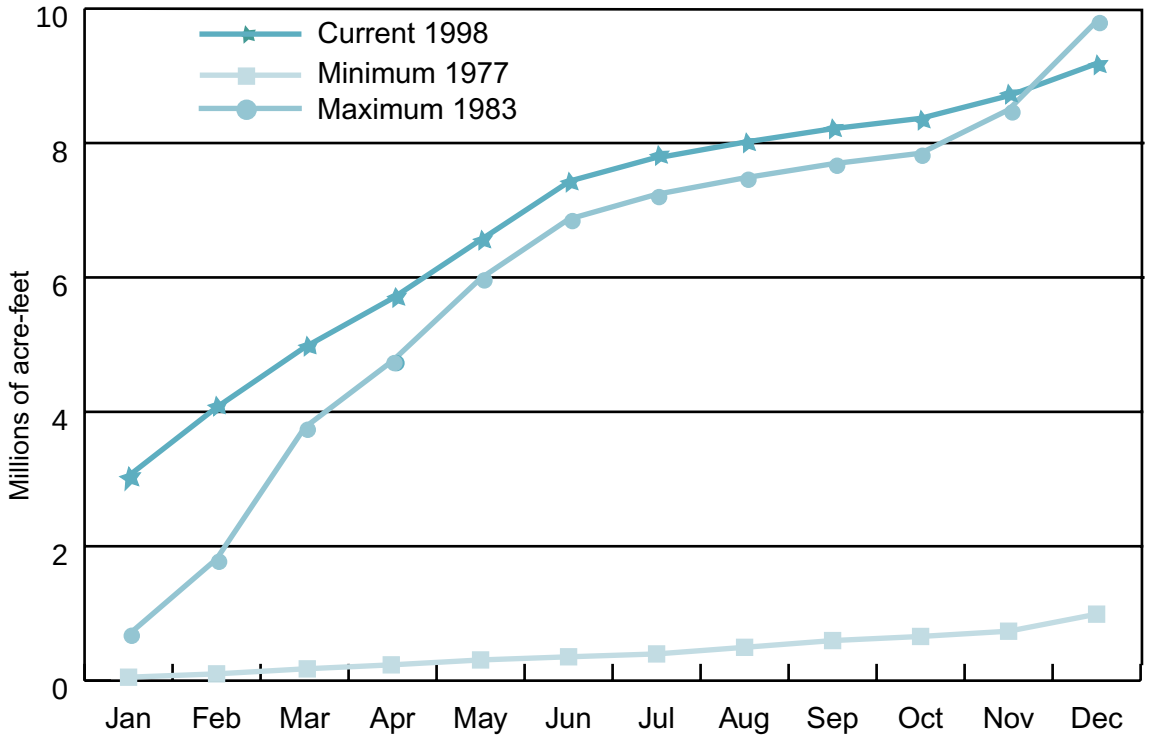


Figure 8-4
End-of-Month Storage in Oroville Reservoir, 1997 and 1998 Calendar Years

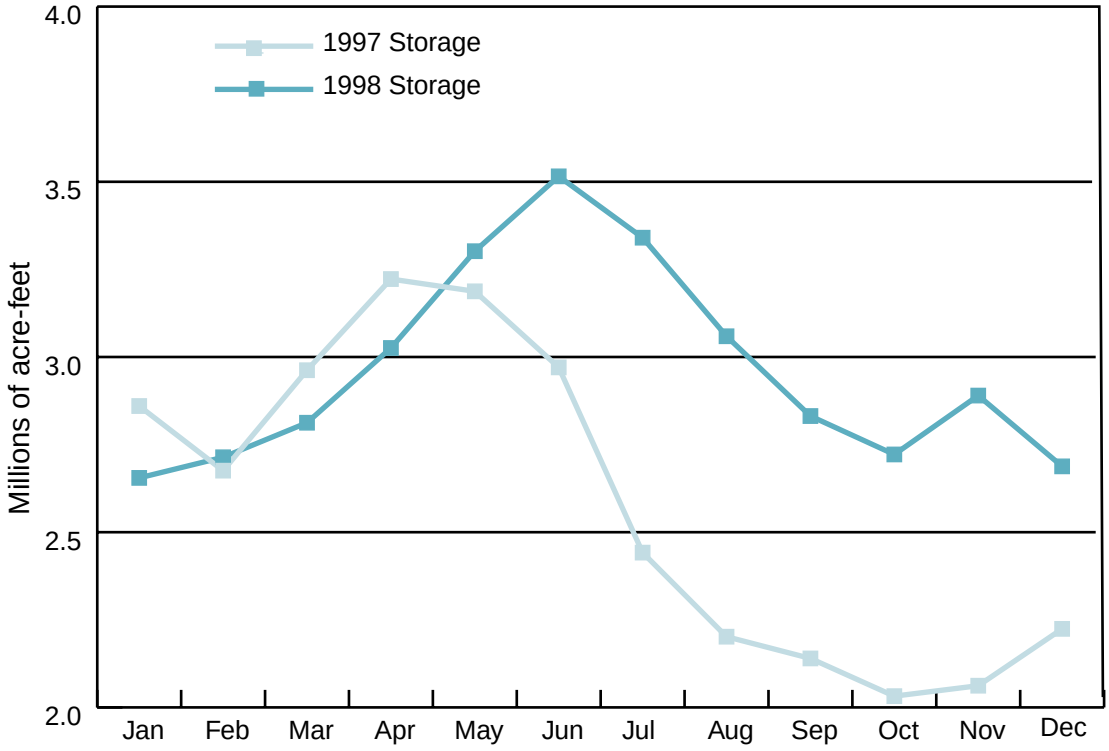
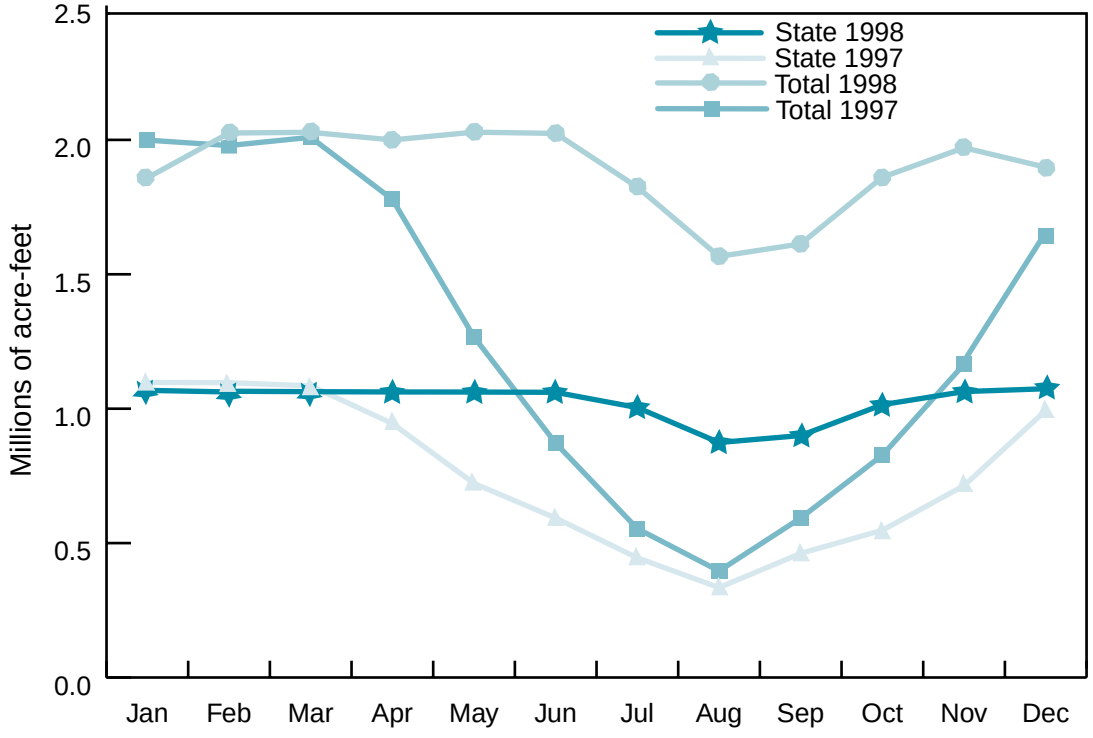


Figure 8-5
End-of-Month Storage in San Luis Reservoir, 1997 and 1998 Calendar Years



By the end of the 1998 water year, on September 30, 1998, storage in Lake Del Valle dropped to 30,776 acre-feet—40 percent of maximum capacity. Releases to Arroyo Del Valle and South Bay Aqueduct from Lake Del Valle totaled 85,019 acre-feet for the 1997-98 water year.

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 the 1998 water year, these reservoirs held 603,000 acre-feet—86 percent of their combined normal maximum operating capacity of 701,321 acre-feet. At the end of the water year they held 662,000 acre-feet—94 percent of combined normal maximum operating capacity.

Diversions from the Delta

The SWP diverts water from the Sacramento-San Joaquin Delta through Banks and Barker Slough pumping plants for delivery to SWP storage facilities and contractors. In 1998, the SWP diverted 1,688,312 acre-feet at Banks Pumping Plant, including a combined total of 28,108 acre-feet of Central Valley Project and Cross Valley Canal water wheeled by the Department. Figure 8-6 shows the amounts of water pumped each month in 1998 at Banks Pumping Plant; Figure 8-7 shows the monthly amounts of water diverted from the Delta by the SWP and CVP in 1998. CVP diverts water to similar areas from the Delta through Tracy Pumping Plant. CVP diverted about 2,095,317 acre-feet at Tracy Pumping Plant in 1998. Combined Delta exports include all of these plants.

From Banks Pumping Plant, water is delivered either to the South Bay area through the South Bay Aqueduct or to the San Joaquin Valley, Central Coastal, and Southern California areas through the California Aqueduct. From Barker Slough Pumping Plant, water is delivered to the North Bay Aqueduct.

On October 9, 1998, the Department began pumping Cross Valley Canal water at Banks Pumping Plant for USBR according to the Cross Valley Canal Wheeling agreements. The initial rate was about 600 acre-feet per day during on-peak hours. Total amount pumped for the month was about 13,900 acre-feet.

Combined SWP and CVP Delta exports peaked at around 22,000 acre-feet per day during the first 2 weeks of 1998 due to increased downstream demands. Demands decreased as runoff in major Northern California rivers ranged up to 200 percent of monthly average in January. In February, statewide runoff was nearly two and one-half times average for the month, while total exports dropped to below 2,000 acre-feet per day. Total monthly Delta exports in 1998 gradually increased from about 104,000 acre-feet in April to about 562,000 acre-feet in October, before finally dropping to about 144,000 acre-feet in December. Delta exports totaled about 3.8 million acre-feet for 1998.

The SWP also diverted 36,468 acre-feet at Barker Slough Pumping Plant to deliver through the North Bay Aqueduct for use by North Bay Aqueduct water contractors.

In the San Joaquin Valley near Kettleman City, the existing Coastal Branch of the Aqueduct serves agricultural areas west of the California Aqueduct, including municipal and industrial water users in San Luis Obispo and Santa Barbara counties. In 1998, total water pumped through Dos Amigos Pumping Plant to the San Joaquin Valley totaled about 2.5 million acre-feet. Included in that amount are 13,500 acre-feet for CVC water delivered to Westlands Water District. Also included is about 1,010,000 acre-feet federal share of pumping at Dos Amigos. Figure 8-8 shows the State's share of water pumped each month.

In 1998, water pumped through Edmonston Pumping Plant for delivery to Southern California totaled 564,121 acre-feet. Figure 8-9 shows the amount of water pumped each month.

Information for this chapter was provided by the Division of Flood Management, the Division of Operations and Maintenance, and the State Water Project Analysis Office.

Figure 8-6
State Share of Water Pumped at Banks Pumping Plant in 1998, by Month

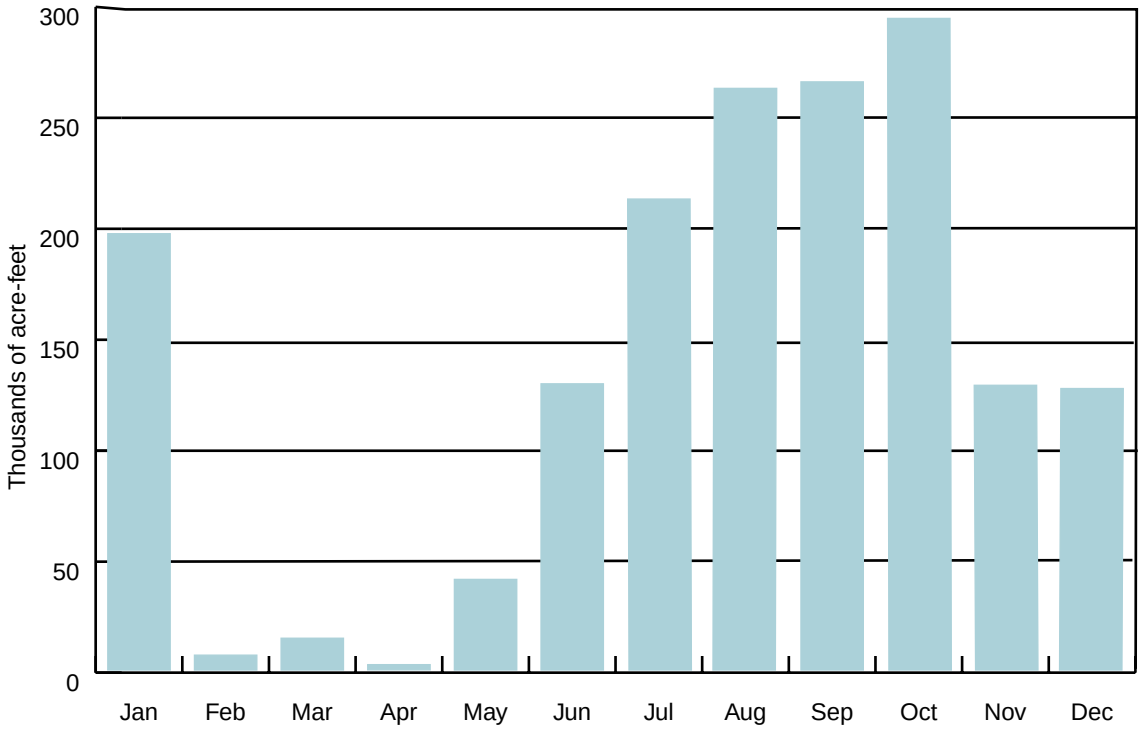


Figure 8-7
Water Diverted from the Sacramento-San Joaquin Delta by the State Water Project and Central Valley Project in 1998, by Month

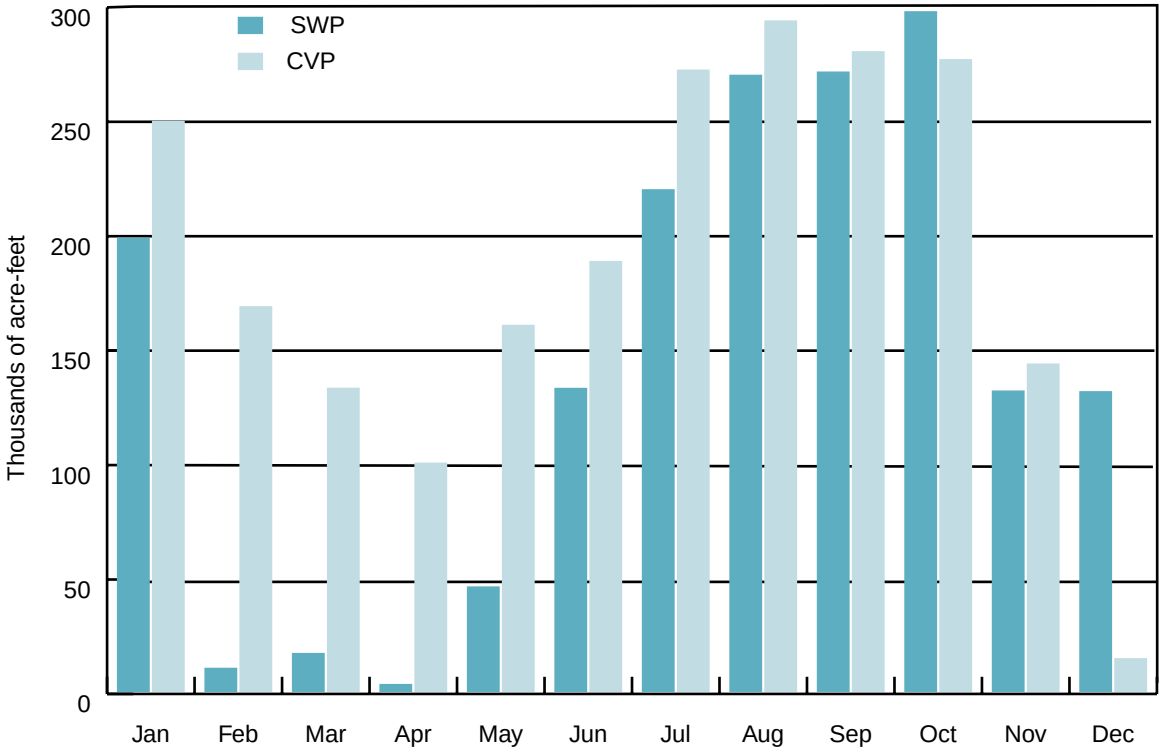


Figure 8-8
Water Pumped at Dos Amigos Pumping Plant in 1998, by Month

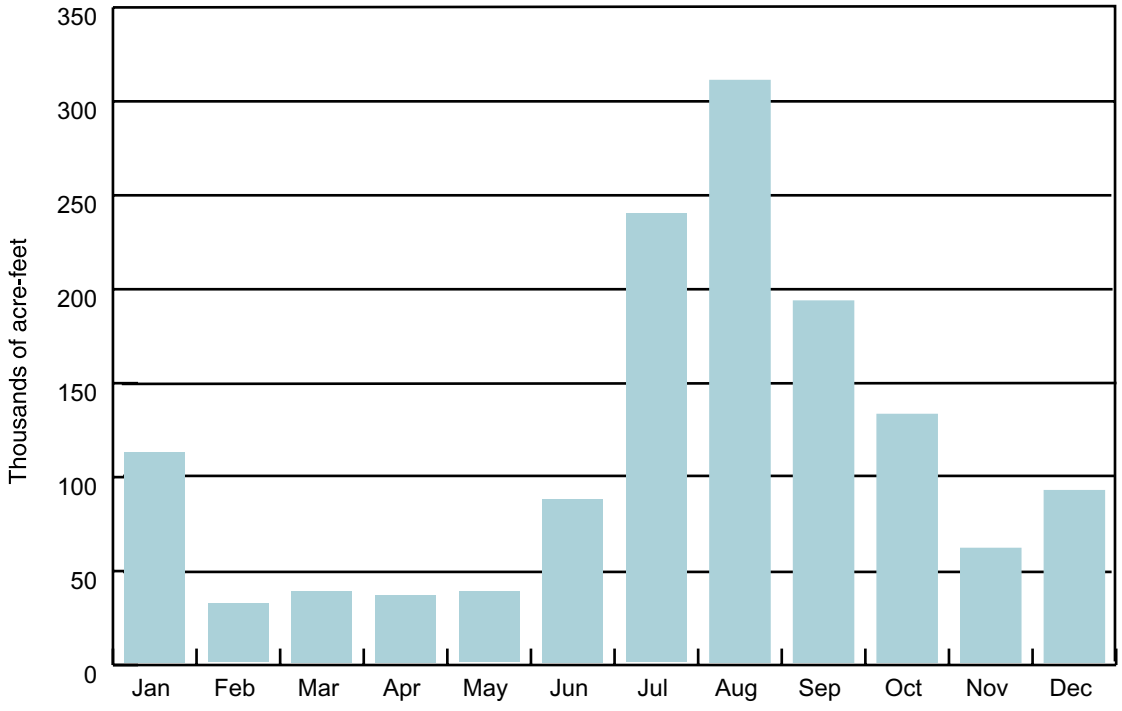
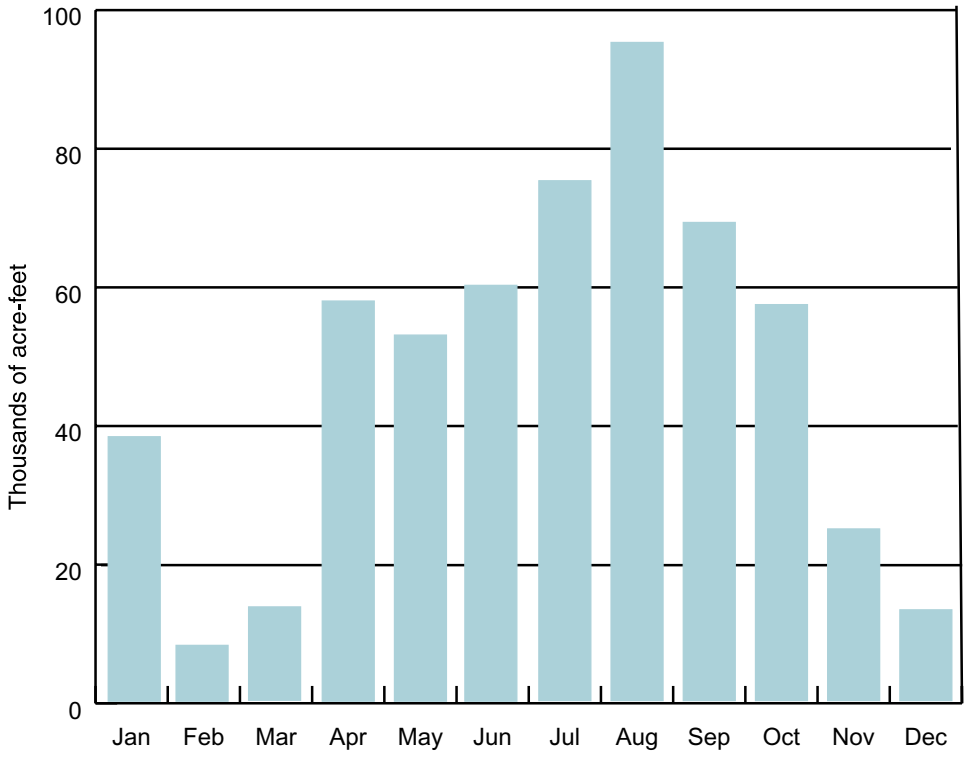


Figure 8-9
Water Pumped at Edmonston Pumping Plant in 1998, by Month



Chapter 9
Water Contracts and Deliveries

Banks Pumping Plant

Significant Events

- The Department executed a letter agreement among Alameda County Flood Control and Water Conservation District-Zone 7, San Benito County Water District, and the Department, approving the conveyance of up to 4,000 acre-feet of SBCWD's Central Valley Project water from O'Neill Forebay to the Semitropic Water Storage District for banking and later exchange.

- The Department executed an agreement among Coachella Valley Water District, Desert Water Agency, Tulare Lake Basin Water Storage District, Delta Lands Reclamation District No.770, and the Department, approving the conveyance and delivery of up to 30,000 acre-feet of flood-flow runoff from the Kaweah, Tule, and Kings rivers to CVWD and DWA.

- In 1998, the SWP delivered 2,755,335 acre-feet of water to 27 of its 29 long-term water contractors and 16 other agencies.

- The SWP delivered 1,745,807 acre-feet of entitlement water to 27 of its 29 long-term water contractors, thus meeting 100 percent of contractors' demands for entitlement water.

The long-term water supply contracts for water service from the State Water Project between the Department and 29 local agencies are basic to the project's construction and operation. In return for the State financing, constructing, operating, and maintaining facilities needed to provide water service, the agencies contractually agreed to repay all associated SWP capital and operating costs.

The Department delivers water to SWP contractors according to long-term water supply contracts, which are amended as needed. The contracts, among other things, specify amounts of water that the Department may deliver to SWP contractors every year. During 1998, the Department executed one amendment to these contracts.

The Department also enters into miscellaneous agreements with SWP contractors and other agencies—which may be amended periodically—to convey SWP and non-SWP water through the California Aqueduct, approve turnout construction along SWP facilities, and establish turnout operation and maintenance regulations. During 1998, the Department executed 24 water conveyance/storage agreements, and one turnout agreement with SWP contractors.

Detailed information about contracts and amendments follows.

Long-Term SWP Water Supply Contracts

The first water supply contract was signed with the Metropolitan Water District of Southern California on November 4, 1960. The contract was negotiated by the Department and MWD according to terms of the contracting principles for water service contracts announced by Governor Edmund G. Brown on January 20, 1960.

The MWD contract became the prototype for all water contracts; by the end of 1967, 31 agencies had contracted for water. In addition, a water supply contract was executed with the City of West Covina in December 1963, but was terminated in August 1965; the city's water entitlement was transferred to MWD through an amendment to the district's long-term contract with the Department. Long-term contracts with Hacienda Water District and Devil's Den Water District were also terminated when those districts transferred their water entitlements, through contract amendments, to Tulare Lake Basin Water Storage District (1981) and Castaic Lake Water Agency (1992), respectively. Today the SWP has long-term water supply contracts with 29 agencies. Those contracts have been amended repeatedly to incorporate mutually desired modifications.

All water contracts signed in the 1960s included an estimate of the date water would first be delivered and a schedule of the amount of water the agency could expect to be delivered annually (annual entitlement). That amount was designed to increase gradually until the maximum amount of annual entitlement was reached. The total combined maximum annual entitlement for all water contracting agencies was initially 4,230,000 acre-feet, assuming full development of the SWP.

The contracts were initially 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. As a result of amendments to contracts in the 1990s, the current combined maximum annual entitlement totals 4,172,786 acre-feet, and the contracts are in effect for the longest of the following periods: (1) the project repayment period, which extends to the year 2035; (2) 75 years from the date of the contract; or (3) the period ending with the latest maturity date of any bond used to finance the construction costs of project facilities.

Amendments to Long-Term SWP Water Supply Contracts

All the original contracts signed by the Department and local agencies have been amended to incorporate mutually desired changes. Most amendments fall under the following eight general categories:

- revision of annual entitlements;
- enlargement and extension of the East Branch and extension of the Coastal Branch of the California Aqueduct;
- purchase of excess capacity;
- provisions to carry over entitlement water;
- surplus water provisions;
- unscheduled water provisions;
- wet-weather provisions; and
- Monterey Agreement principles.

Table 9-1 describes the eight categories of amendments while Table 9-2 lists contractors in each category.

The following long-term contract was amended during 1998.

Napa County Flood Control and Water Conservation District. The Department executed Amendment Number 20, dated December 10, 1998, to the long-term water supply contract between NCFCWCD and the Department. The Amendment provided for increasing NCFCWCD's Table A annual entitlements from 1999 through 2013 and decreasing them from 2014 through 2018. The maximum annual entitlement to be reached in 2021 was not revised and remained at 25,000 acre-feet. (Amendment Number 19 was never executed.)

Table 9-1
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 annual amounts of entitlement water to long-term water service contractors
2. Enlargement or extension of East Branch and Extension of Coastal Branch of California Aqueduct	Amendments for allocating costs and benefits of the enlargement or extension of the East Branch aqueduct, and extension of the Phase II facilities of the Coastal Branch of the California Aqueduct
3. Purchase of excess capacity	Amendments to allow contractors to contract for excess capacity in the California Aqueduct
4. Provisions to carry over entitlement water [Article12(e)]	Amendments to allow contractors to carry over undelivered 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
6. Unscheduled water provisions	Amendments to allow contractors to take delivery of unscheduled water; that is, water available for a very short 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
8. Monterey Agreement principles	Amendments to implement the principles of the Monterey Agreement, described in detail in Bulletin 132-95, pages 5 through 9

[a] See Table 9-2, "Amendments to Water Supply Contracts, December 31, 1998, by Category and Contracting Agency," for names of contractors to which categories apply. In addition, each volume of *The California State Water Project Water Supply Contracts* contains a list of amendments by category.

Table 9-2
Amendments to Water Supply Contracts, December 31, 1998, by Category and Contracting Agency

	State Water Project Amendment Category [a]							
Contracting Agency	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Upper Feather River Area								
City of Yuba City	•				○ [b]			•
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				•	○		○	•
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 9-1, "Amendments to Water Supply Contracts, by Category."
[b] ○ indicates amendment category nullified by Monterey Amendments.

Monterey Amendments

During 1998, the Department did not execute any Monterey Amendments. Plumas County Flood Control and Water Conservation District, Empire West Side Irrigation District, and Ventura County Flood Control District remain the only long-term SWP contractors who have not signed the Monterey Amendment.

The Monterey Amendments increase the reliability of existing water supplies; provide stronger financial management for the SWP; and increase water management flexibility, providing more tools for local water agencies to maximize use of existing facilities. Changes to SWP operations incorporated in the Monterey Amendments include changes in determination of water allocations, transfer of entitlement and land, financial restructuring, and increased operational flexibility.

Miscellaneous Agreements with Long-Term SWP Contractors

During 1998, the Department entered into the following agreements.

Water Conveyance/Storage Agreements

Agreements were executed with long-term contractors as listed below.

Alameda County Flood Control and Water Conservation District-Zone 7. A letter agreement, dated September 8, 1998, among the Department, ACFCWCD-Zone 7, and San Benito County Water District, approved the conveyance of up to 4,000 acre-feet of SBCWD's CVP water from O'Neill Forebay to Semitropic Water Storage District for banking and later exchange. This water was a portion of SBCWD's CVP water allocation that it could not use because the Hollister Conduit, a pipeline to SBCWD from San Luis Reservoir, washed out earlier in the year. SBCWD requested ACFCWCD-Zone 7 to bank and return the water in accordance with ACFCWCD-Zone 7's agreement with SWSD for the water banking and exchange program. Deliveries of the return water to ACFCWCD-Zone 7 and SBCWD are to be completed by December 31, 2018. A total of 4,000 acre-feet was delivered to SWSD.

Alameda County Flood Control and Water Conservation District-Zone 7. The agreement, dated

December 10, 1998, among ACFCWCD-Zone 7, KCWA, and the Department, provided for the delivery of a portion of ACFCWCD-Zone 7's 1998 entitlement water and other water supplies, to be stored in, and later recovered from, groundwater basins within KCWA, in accordance with the ACFCWCD-Zone 7 and Semitropic Water Storage District Banking Program Agreement. All return water is to be delivered to ACFCWCD-Zone 7 by December 31, 2035. This agreement is in accordance with the provisions of the Monterey Amendment that encourage operational flexibility for the SWP, such as groundwater storage of SWP water outside a contractor's service area for later use within the service area. During 1998, the Department delivered 1,970 acre-feet of ACFCWCD-Zone 7's 1998 SWP entitlement water for storage by SWSD.

Alameda County Flood Control and Water Conservation District-Zone 7. An agreement dated July 28, 1995, among Byron-Bethany Irrigation District, ACFCWCD-Zone 7, and the Department provides for the transfer of up to 5,000 acre-feet of nonproject water annually from BBID to ACFCWCD-Zone 7 through SWP facilities. BBID may only transfer real water that has been made available for transfer by conservation and land fallowing. In 1998, 2,000 acre-feet of SWP water were pumped at Banks Pumping Plant and delivered to ACFCWCD-Zone 7's turnouts in the South Bay Aqueduct.

Alameda County Water District. An agreement, dated September 29, 1998, among ACWD, KCWA, and the Department, provided for the delivery of a portion of ACWD's 1998 entitlement water and other water supplies, to be stored in, and later recovered from, groundwater basins within KCWA, in accordance with the ACWD and SWSD Banking Program Agreement. All return water is to be delivered to ACWD by December 31, 2035. The Department, ACWD, and KCWA signed similar delivery agreements for 1996 and 1997. These agreements were in accordance with the provisions of the Monterey Amendment. During 1998, the Department delivered 3,780 acre-feet of ACWD's 1998 SWP entitlement water for storage by SWSD.

Coachella Valley Water District and Desert Water Agency. An agreement dated January 28, 1999, among the Department, CVWD, Desert Water Agency, Tulare Lake Basin Water Storage District, and Delta Lands Reclamation District No. 770, approved the conveyance and delivery of up to 30,000 acre-feet of flood-flow runoff from the Kaweah, Tule, and Kings rivers to CVWD and DWA. This flood runoff was diverted into the California Aqueduct through the Kern River-California Aqueduct Intertie and the Cross Valley Canal and was in excess of the amounts that can be used by the SWP under normal operations. DLRD had requested the Department to convey this flood runoff as non-SWP deliveries to reduce the amount of flood runoff that could damage lands within the Tulare Lake Bed. This agreement covered all flood runoff delivered from April 24, 1998, through July 31, 1998, or until there was no longer any Kaweah, Tule, and Kings rivers flood runoff that could not be utilized by the SWP. Flood runoff totaling 12,547 acre-feet was delivered to DWA and 7,609 acre-feet was delivered to CVWD.

Dudley Ridge Water District. A letter agreement, dated February 26, 1998, approved the delivery of up to 10,000 acre-feet of DRWD's 1998 interruptible water and up to 10,000 acre-feet of DRWD's 1998 SWP entitlement water to the Kern Water Bank and the return of a like amount of water by December 31, 2008. The Department approved similar agreements in 1996 and 1997. During 1998, the actual amount of interruptible water delivered to KWB was 984 acre-feet; entitlement water delivered was 4,941 acre-feet.

Dudley Ridge Water District. An agreement, dated May 22, 1998, among DRWD, TLBWSD, and the Department, approved a change in point of delivery of up to 1,000 acre-feet of DRWD's annual SWP entitlement water to Repayment Reach 8C. TLBWSD has the capability to convey a portion of DRWD's entitlement water from Reach 8C to the northern section of DRWD not served by DRWD's conveyance facilities. The agreement will remain in effect through December 31, 2035. A 1-year agreement to provide this water service was executed in 1996. During 1998, the total amount delivered to TLBWSD under this agreement was 90 acre-feet.

Dudley Ridge Water District. A letter agreement, dated June 30, 1998, between the Department and DRWD, obtained DRWD's concurrence with the

1997 Groundwater Recovery Program. In August 1997, 2,670 acre-feet of DRWD's 1997 entitlement water was delivered to Reach 12E of the California Aqueduct in exchange for a like amount of the Department's reserved water, as defined in the 1995 Recovery Agreement between the Department and KCWA, stored in the KWB.

Dudley Ridge Water District. A letter agreement dated September 25, 1998, between the Department and DRWD, approved the transfer of up to 300 acre-feet of DRWD's 1998 SWP entitlement water to Westlands Water District for a landowner in DRWD who also farmed in WWD. The water would be delivered to lands in Kings County that are within the SWP-permitted place of use. A total of 200 acre-feet was delivered to WWD.

Kern County Water Agency. A letter agreement dated January 30, 1998, between the Department and KCWA, approved the delivery of up to 120 acre-feet of Department of Fish and Game's 1997 wildlife habitat water to KCWA. The water was provided for under the August 19, 1974, agreement among the Department, DFG, and USBR for the development, management, and maintenance of wildlife habitat of project lands adjacent to the California Aqueduct in the San Joaquin Valley. The delivery was to facilitate an arrangement whereby KCWA delivered a like amount of water to DFG at the KWB for irrigation of wildlife habitat on the KWB for the Gamebird Heritage Program. Under the letter agreement, KCWA provided 118 acre-feet of local water to DFG, and was to schedule a like amount of DFG's water before May 15, 1998. However, due to abundant local water supplies brought on by El Niño, the letter agreement was extended through December 31, 1998. No water was delivered.

Kern County Water Agency. A letter agreement dated May 13, 1998, and amended August 26, 1998, between the Department and KCWA, approved the exchange of up to 20,000 acre-feet of KCWA 1998 SWP entitlement water for a like amount of WWD's CVP water. WWD would deliver up to 20,000 acre-feet of CVP water to KCWA during February through April 15, 1998, and KCWA would return a like amount during April 15 through December 31, 1998. The exchange involved reclassification of some entitlement water delivered to KCWA during February through April 1998 as WWD exchange water. The SWP water was delivered to WWD via Reach 7 of the California Aqueduct in Kings County for use within the SWP service area. The total amount of 20,000 acre-feet was exchanged in 1998.

Kern County Water Agency. A letter agreement dated April 13, 1998, between the Department and KCWA, approved the exchange of up to 3,000 acre-feet of KCWA 1998 SWP entitlement water for a like amount of CVP water purchased by WWD. The CVP water will be delivered to KCWA via the Friant-Kern Canal for recharge. SWP water will be delivered to WWD via Reach 7 of the California Aqueduct in Kings County for use within the SWP service area. A total of 2,600 acre-feet was exchanged.

Kern County Water Agency. A letter agreement dated June 23, 1998, between the Department and KCWA, approved the transfer of up to 35,435 acre-feet of KCWA's 1998 SWP entitlement water to WWD. The agreement facilitated a water transfer from landholders within three member units of the agency—Lost Hills Water District, Berrenda Mesa Water District, and Belridge Water Storage District—to lands they farmed in WWD. Similar transfers were approved by the Department in 1996 and 1997. The actual amount of water transferred from KCWA to WWD in 1998 was 32,435 acre-feet.

Kern County Water Agency. A letter agreement dated August 31, 1998, between the Department and KCWA, approved the exchange of up to 100,000 acre-feet of KCWA's 1997 SWP entitlement water to WWD for a like amount of return water from WWD as follows:

- SWP entitlement water for Friant-Kern Canal Water—an exchange to facilitate the water purchase by a landowner from WWD. Up to 10,000 acre-feet of KCWA's entitlement water would be exchanged for water from the Friant-Kern Canal. This exchange was completed in 1998.
- SWP entitlement water for Kern River water (La Hacienda, Incorporated)—an exchange to facilitate the Kern River water purchase by WWD from Nickel Limited Liability Company. Up to

35,000 acre-feet of KCWA's entitlement water would be exchanged for the Kern River water that would be delivered from Lake Isabella storage. The exchange was completed in 1998.

- SWP entitlement water for future imported water payback—an exchange of up to 35,000 acre-feet of KCWA's entitlement water for a like amount of CVP water or other imported water from WWD in future years.
- SWP entitlement water for banked CVP section 215 water—an exchange to facilitate the purchase of banked CVP Section 215 water and floodwater from the Friant-Kern Canal by Harris Ranch, a WWD landowner. The water was acquired from Westside Mutual Water Company, a participant in the Kern Water Bank. Up to 20,000 acre-feet of KCWA's entitlement water would be exchanged for the banked water. Due to lower than anticipated water demands, Harris Ranch delayed the delivery of exchange water and made arrangements with a water user in TLBWSD to take delivery of up to 20,000 acre-feet of KCWA's entitlement water by December 31, 1998. To complete the originally approved exchange, up to 20,000 acre-feet of TLBWSD's 1999 entitlement water would be delivered to WWD during March 1 to July 15, 1999, for Harris Ranch. A letter agreement between the Department, KCWA, and TLBWSD, dated December 30, 1998, approved the delivery of KCWA's 1998 SWP entitlement water to TLBWSD and the exchange of up to 20,000 acre-feet of TLBWSD's 1999 SWP entitlement water with WWD.

A total of 83,100 acre-feet was exchanged under the August 31, 1998, agreement.

Kern County Water Agency. A letter agreement dated August 20, 1997, between the Department and KCWA approved the exchange of up to 12,000 acre-feet of KCWA's 1997 SWP entitlement water to WWD for a like amount of pre-1914 water right water purchased by WWD. The return water will be delivered from the Friant-Kern Canal to KCWA for recharge. The letter agreement was amended on December 12, 1997, to increase the exchange limit to 20,000 acre-feet, and, on April 15, 1998, to allow deliveries of carryover 1997 entitlement water through January 25, 1998. A total of 1,684 acre-feet was delivered to WWD in 1998 under this agreement.

Kern County Water Agency. A letter agreement dated July 15, 1998, among KCWA, TLBWSD, and the Department, approved the transfer of up to 1,500 acre-feet of KCWA's 1998 SWP entitlement water to TLBWSD. The water was transferred from LHWD, a member unit of KCWA, to Westlake Farms located within the service area of TLBWSD. The transferred water is used to create wetland habitat for shore birds as required under a mitigation agreement between the Regional Water Quality Control Board and LHWD for the operation of LHWD's evaporation basin. A total of 1,000 acre-feet was transferred. Similar transfers were approved by the Department in 1996 and 1997.

Kern County Water Agency. An agreement dated December 15, 1998, between the Department and KCWA, approved the introduction of KCWA's groundwater, surface water, floodwater, or other local supplies into the California Aqueduct using the Cross Valley Canal Turnout. Separate existing or future point of delivery, exchange, re-regulation, or floodwater agreements would also be required in addition to this agreement. This agreement terminates on January 1, 2035.

Metropolitan Water District of Southern California. A letter agreement dated April 10, 1998, between MWD and the Department, approved the delivery of approximately 6,000 acre-feet of floodwater stored in the West Branch reservoirs to MWD's turnouts in Reach 30 of the California Aqueduct. Heavy rains had filled the West Branch reservoirs to their maximum levels and the Department needed to meet its contractual obligations with the Los Angeles Department of Water and Power. The Department was obligated to provide 5,000 to 6,000 acre-feet of reservoir capacity in Pyramid Reservoir to allow LADWP to utilize the Pyramid-Elderberry-Castaic complex for daily pump-back and power generation operations. Instead of releasing this local floodwater to the ocean, this letter agreement provided for its delivery to MWD. The floodwater was not considered normal SWP entitlement water and was delivered without the normal SWP entitlement water charges since no SWP pumping facilities were used to convey the floodwater. A total of 10,121 acre-feet

of floodwater was delivered between April 9 through April 23, 1998.

Metropolitan Water District of Southern California. A letter agreement dated August 28, 1997, between MWD and the Department, approved the exchange of up to 52,000 acre-feet of MWD's 1997 SWP entitlement water to USBR in return for a like amount of water acquired by USBR for delivery to MWD by May 31, 1998. The actual amount of water exchanged with USBR was 37,000 acre-feet. USBR returned 25,900 acre-feet in 1997 and 11,100 acre-feet in 1998.

Metropolitan Water District of Southern California. A letter agreement dated September 17, 1998, amended the December 29, 1997, letter agreement among the Department, MWD, KCWA, and Arvin-Edison Water Storage District, that approved the delivery of up to 20,000 acre-feet of MWD's 1997 SWP entitlement water to KCWA for storage in AEWSD's groundwater basin by February 28, 1998. The amendment approved an increase for a total delivery of up to 75,000 acre-feet of MWD's entitlement to AEWSD's groundwater basin for storage by December 20, 1998. A total of 18,761 acre-feet of MWD's 1998 entitlement water was delivered to groundwater storage. Also, 8,797 acre-feet of carryover from 1997 was stored in AEWSD's groundwater basin in 1998. Additionally, MWD stored 31,450 acre-feet of 1998 entitlement and 1,833 acre-feet of 1997 carryover in SWSD under a separate agreement.

Mojave Water Agency. A letter agreement for the change in point of delivery, dated November 13, 1997, among MWA, AVEKWA, and the Department, approved the delivery of up to 2,250 acre-feet of MWA's entitlement of AVEKWA. A total of 1,345 acre-feet of MWA's 1998 entitlement water was delivered to AVEKWA.

Oak Flat Water District. A letter agreement dated August 6, 1998, between the Department and OFWD, approved the transfer of up to 300 acre-feet of OFWD's 1998 SWP entitlement water to the Tracy Golf and Country Club. The club needed an emergency supply of water due to the failure of their existing well. This transfer allowed the club time to either repair the existing well or develop another permanent water source. A total of 115 acre-feet was delivered to the country club.

Santa Clara Valley Water District. The agreement, dated September 19, 1998, among SCVWD, KCWA, and the Department, provided for the delivery of a portion of SCVWD's 1998 SWP entitlement water and other water supplies, to be stored in and later recovered from groundwater basins within KCWA, in accordance with the Santa Clara and Semitropic Water Storage District Banking Program Agreement. The stored water is to be returned to SCVWD by year 2035. This was in accordance with the provisions of the Monterey Agreement that encourage operational flexibility for the SWP, such as groundwater storage of SWP water outside a contractor's service area for later use within the service area. Similar agreements were approved by the Department in 1996 and 1997. The amount of 1998 entitlement water delivered to SWSD pursuant to this agreement was 23,800 acre-feet.

Solano County Water Agency. A letter agreement dated July 3, 1998, among the Department, SCWA, and Mojave Water Agency, approved the exchange of up to 2,000 acre-feet of SCWA's 1998 SWP entitlement water to MWA for the return of up to 1,000 acre-feet of MWA's future SWP entitlement water or other future water supply as mutually agreed to by MWA and SCWA, and approved by the Department. The water is to be returned by December 31, 2008, during a dry year. A similar agreement was executed in 1997. The full amount was delivered to MWA in 1998.

Tulare Lake Basin Water Storage District. A letter agreement, dated April 12, 1998, between the Department and TLBWSD, approved the transfer of up to 3,000 acre-feet of TLBWSD's 1998 SWP entitlement water to WWD. The agreement facilitated the water transfer from Hansen Ranches, a landowner in the TLBWSD, to lands farmed in WWD under the name of Vista Verde Farms, Incorporated. The actual amount transferred was 3,000 acre-feet. Similar transfers were approved by the Department in 1996 and 1997.

Tulare Lake Basin Water Storage District, Kern County Water Agency, and Metropolitan Water District of Southern California. An agreement, dated December 23, 1998, among the Department, TLBWSD, MWD, KCWA, and Western Water Company, approved an exchange of up to 1,000 acre-feet of non-SWP water for a like amount of KCWA 1998 SWP entitlement water. The water was TLBWSD's surplus Kern River water purchased by WWC and sold to Santa Margarita Water District, a member agency of MWD. The Department conveyed to MWD, as non-SWP water, up to 1,000 acre-feet of 1998 entitlement water originally scheduled for delivery to KCWA. TLBWSD exchanged the 1,000 acre-feet of local Kern River water with KCWA for the like amount of KCWA's 1998 entitlement water that was delivered to MWD. The Department accepted the non-SWP exchange water on behalf of MWD at Reach 13B on or before December 31, 1998, and delivered the exchange water to MWD at Reach 26A. A total of 1,000 acre-feet was exchanged. This exchange was classified as general wheeling to MWD.

Turnout Agreements

Antelope Valley-East Kern Water Agency. An agreement dated December 16, 1998, between the Department and AVEKWA, allowed the construction, operation, and maintenance of the 95th Street East Turnout, located at milepost 357.52, Reach 22A on the East Branch of the California Aqueduct. The turnout has a design capacity of 13 cfs.

Agreements Related to the Monterey Amendments

Turnback Water Pool Program. Under Article 56(d) of the Monterey Amendments, the third year of the Turnback Water Pool Program was initiated through Notice to the State Water Project Contractors No. 98-03, dated January 29, 1998. All SWP contractors who signed Monterey Amendments were permitted to participate in the program. The program allowed SWP contractors to offer a portion of their approved 1998 entitlement for sale in a turnback pool for use outside their service area. Other contractors interested in purchasing this water could then request a portion or all of it. Based on supply and demand, the turnback water was allocated among the selling and purchasing contractors.

Transactions for pool A occurred in January and February 1998; transactions for pool B occurred in March 1998. Turnback water sold for 50 percent of the Delta Water Rate per acre-foot through pool A and for 25 percent of the Delta Water Rate per acre-foot through pool B. All money collected through the turnback pool program was paid to the selling contractors. The 1998 Turnback Water Pool Program closed April 1, 1998.

The following contractors participated in pool A of the Turnback Water Pool Program:

- County of Butte sold 30 acre-feet;
- SLOCFCWCD sold 132 acre-feet;
- SBCFCWCD sold 463 acre-feet;
- AVEKWA sold 3,195 acre-feet;
- CLWA sold 1,147 acre-feet;
- SBVMWD sold 4,272 acre-feet;
- SGVMWD sold 361 acre-feet;
- DRWD purchased 7,300 acre-feet; and
- TLBWSD purchased 2,300 acre-feet

The following contractors participated in pool B of the Turnback Water Pool Program:

- County of Butte sold 370 acre-feet;
- SLOCFCWCD sold 2,174 acre-feet;
- SBCFCWCD sold 10,773 acre-feet;
- AVEKWA sold 70,685 acre-feet;
- CLWA sold 18,853 acre-feet;
- SBVMWD sold 75,828 acre-feet;
- SGVMWD sold 10,437 acre-feet;
- DRWD purchased 3,000 acre-feet;
- TLBWSD purchased 12,300 acre-feet;
- CVWD purchased 55,000 acre-feet; and
- DWA purchased 20,000 acre-feet.

The Department purchased the remaining 98,820 acre-feet of turnback water.

Other Administrative Actions

Kern River Intertie. From April through July 1998, the Department accepted 188,048 acre-feet of floodwater flows into the California Aqueduct from the

Kern River Intertie. Under a 1975 agreement among the Department, KCWA, and Buena Vista Water Storage District, floodwater from the Kern River and other water that enters the Kern River downstream of Lake Isabella, such as Friant-Kern Canal water, can be diverted into the California Aqueduct to alleviate flooding in Kern and Tulare counties. A total of 167,892 acre-feet of the floodwater was used to satisfy existing SWP demands downstream of the Intertie in accordance with the 1975 agreement. The other 20,156 acre-feet was delivered to DWA, CVWD, and MWD.

Dudley Ridge Water District. By letter dated January 22, 1998, the Department approved the 1998 delivery of up to 6,000 acre-feet of DRWD's 1998 SWP entitlement water to lands adjacent to DRWD's service area within Kings County. DRWD had already begun annexation proceedings for these lands. The Department's approval was contingent upon Kings County Board of Supervisors approving delivery of this water to Kings County lands prior to completion of the annexation by Dudley Ridge. No water was delivered.

Miscellaneous Agreements with Other Agencies

In addition to negotiating agreements with SWP contractors to provide for specified water deliveries, the Department also entered into several agreements with other agencies for water conveyance, or exchange, between January 31, 1998, and December 31, 1998.

Water Conveyance Agreements–CVP Water

The Department regularly enters into agreements to convey CVP water, such as agreements with contractors receiving water from USBR through the Cross Valley Canal, a water conveyance facility that connects with the Aqueduct near Tupman in Kern County. Other agencies or corporations receive CVP water through agreements between the Department and USBR, including the U.S. Department of Veterans Affairs, U.S. Fish and Wildlife Service, and Musco Olive Products, Inc. Occasionally, the Department also enters into agreements with USBR to convey CVP or SWP water from the Delta to O'Neill Forebay through CVP or SWP facilities. Some of these agreements allow USBR to make up for curtailed water exports from Tracy Pumping Plant associated with improving conditions for fish in the Delta. Other agreements allow replacing water exports foregone during maintenance and repair of the Tracy and Banks pumping plants and CVP and SWP conveyance facilities between the Delta and O'Neill Forebay.

Cross Valley Canal. The CVC is used by eight CVP water contractors to obtain water from the California Aqueduct either by exchange with other agencies or, in the case of two contractors, by direct delivery. The eight water contractors are: County of Fresno, County of Tulare, Hill's Valley Irrigation District, Kern-Tulare Water District, Lower Tule River Irrigation District, Pixley Irrigation District, Rag Gulch Water District, and Tri-Valley Water District. These agencies have had uninterrupted water conveyance service by the Department since 1975/1976 through:

- individual three-party contracts with the Department and USBR, executed in 1975 and 1976;
- individual amendments to those contracts, signed on December 28, 1995; and
- two-year interim renewal contracts signed February 29, 1996, and further renewed on February 20 through February 27, 1998.

Between January 31, 1998, and December 31, 1998, the Department executed agreements with CVC contractors as follows:

- On March 9, 1998, LTRID and PID requested the Department change the point of delivery for their full 1998 CVP entitlement water from the CVC turnout to turnouts in reaches 4 through 7 of the California Aqueduct for delivery to WWD. The Department and the two districts executed individual agreements on November 9, 1998, for Department conveyance of up to 31,102 acre-feet of water for each district, of which 6,750 acre-feet for each district were delivered to WWD. Between February 20 and February 27, 1998, the Department executed eight 3-party interim renewal contracts with USBR and the CVC contractors for Department conveyance of up to 128,300 acre-feet of CVP water per year. Under these contracts, the Department agreed to transport the water from the Delta to the CVC

turnout in Reach 12E of the California Aqueduct. The contracts will be in effect through February 29, 2000. At that time, if all appropriate environmental reviews have been completed, 25-year contracts may be negotiated upon request of the CVC contractors.

Musco Olive Products, Inc. An annual agreement dated January 20, 1998, between the Department and USBR, provided for the conveyance of up to 400 acre-feet of CVP water to Reach 2A of the California Aqueduct for use by Musco Olive Products, Inc. This water was to be conveyed from January 1, 1998, through December 31, 1998. A total of 364 acre-feet was delivered.

U.S. Department of Veterans Affairs. An annual agreement, dated January 15, 1998, between the Department and USBR, approved the conveyance of up to 450 acre-feet of CVP water to Reach 2B of the California Aqueduct for use by the U.S. Department of Veterans Affairs at the San Joaquin Valley National Cemetery. The water was to be conveyed from January 1, 1998, through December 31, 1998. A total of 34 acre-feet was delivered.

U.S. Fish and Wildlife Service Cooperative Agreement. USBR initiated a cooperative agreement with the Department to deliver CVP water to the Kern National Wildlife Refuge for USFWS. Under the terms of this cooperative agreement, dated September 9, 1994, up to 26,530 acre-feet of CVP water would be delivered from Check 21 to the Buena Vista Water Storage District Turnout BV-1B, on Reach 10A of the California Aqueduct, from October 1, 1993, through April 10, 1995. Since the cooperative agreement was signed, six modifications to the agreement have been executed. Under Modification No. 001, dated October 31, 1994, additional funding was provided. Modifications were made each year to the agreement. The latest modification, No. 006, dated January 1, 1998, extended the agreement through April 10, 1999, and defined the water delivery rates for 1999. The Department conveyed 14,081 acre-feet for USBR to the Kern National Wildlife Refuge in 1998.

U.S. Bureau of Reclamation. By letter dated March 23, 1998, USBR agreed to convey SWP water through the Tracy Pumping Plant and the Delta Mendota Canal to O'Neill Forebay. Under this agreement, USBR transported 14,220 acre-feet of SWP water in 1998. The change in point of diversion was necessary to minimize disruptions to SWP operations due to emergency repairs performed at Pool 10 of the California Aqueduct. To repay this water conveyance to USBR, the Department and USBR executed an agreement dated August 5, 1998.

Water Conveyance Agreements—Non-CVP

Westlands Water District—Kings River Water. An agreement dated March 30, 1998, between the Department and WWD, approved delivery of up to 20,000 acre-feet of Kings River water from the Mendota pool through reaches 5, 6, and 7 of the California Aqueduct. This water was made available to WWD from flood control releases from Pine Flat Reservoir, via the Kings River and Fresno Slough, pursuant to an agreement between WWD and Kings River Water Association dated January 31, 1998. During 1998, the Department conveyed 7,117 acre-feet of Kings River water to WWD.

Other Agreements–Turnouts

In 1998, there were no turnout agreements with any miscellaneous agencies.

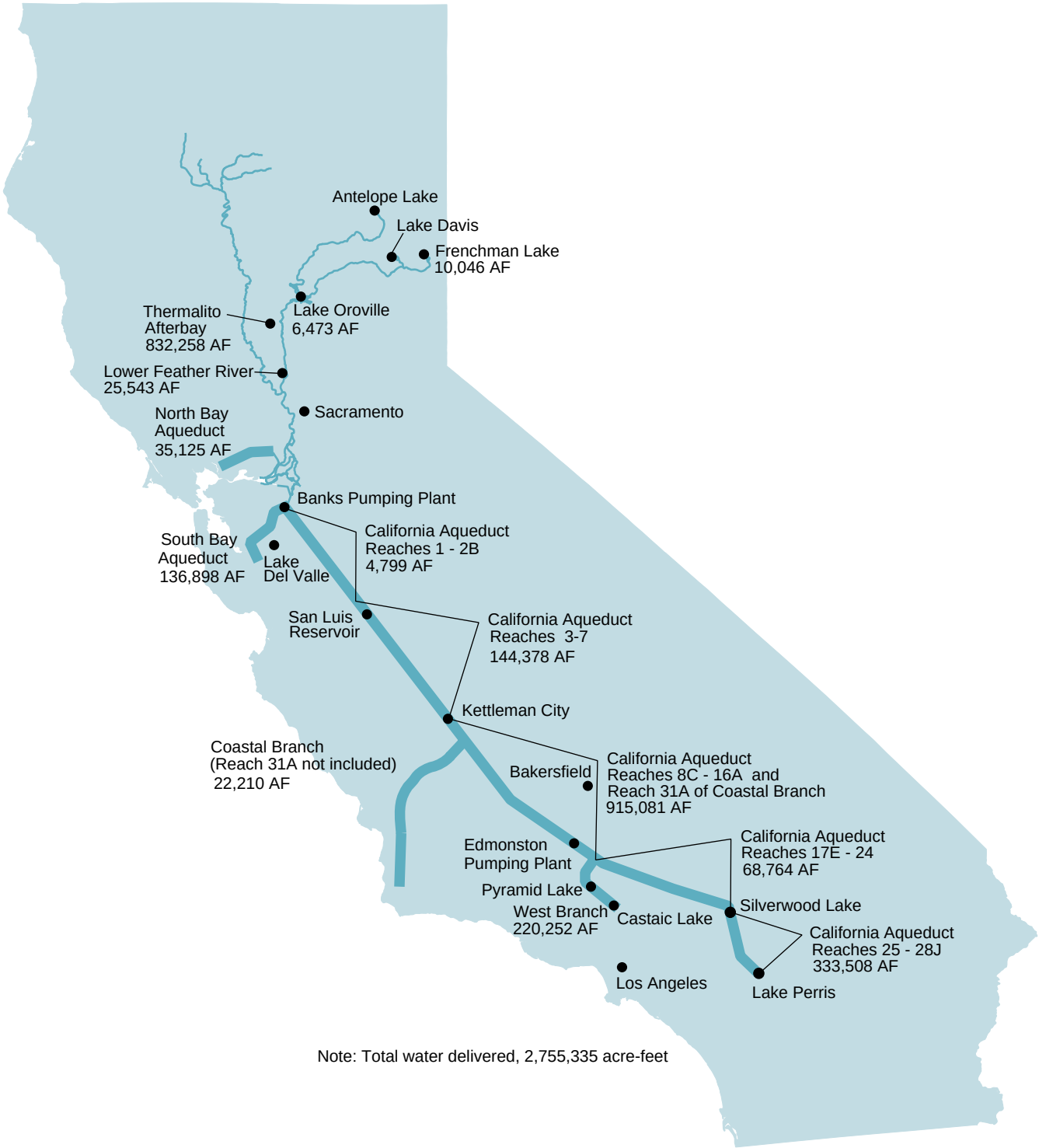
Amendments to Miscellaneous Agreements with Other Agencies

Musco Olive Products, Inc. An annual agreement, dated December 26, 1996, between the Department and USBR, provided for the conveyance of up to 300 acre-feet of CVP water to Reach 2A of the California Aqueduct for use by Musco Olive Products, Inc. This water was to be conveyed from January 1, 1997, through December 31, 1997. At the request of MOP, on January 20, 1998, the Department amended the agreement to revise the water conveyance amount to a maximum of 400 acre-feet.

Water Deliveries

The SWP delivers water for a variety of beneficial uses. In addition to delivering entitlement water to long-term water supply contractors, the SWP:

Figure 9-1
Water Delivered in Calendar Year 1998 and Delivery Locations of Long-Term Water Supply Contractors and Districts in the Feather River Area with Water Right Agreements with the Department



Note: Total water delivered, 2,755,335 acre-feet

- conveys water to and stores water for other public agencies through special contracts and agreements;
- provides water for wildlife and recreational uses; and
- stores, releases, and delivers local runoff water from SWP facilities to agencies that hold local water rights.

In 1998, 2,755,335 acre-feet of water were conveyed to 27 long-term contractors and 16 other agencies. That amount includes:

- 1,745,807 acre-feet of entitlement water[1], with 1,527,385 acre-feet delivered to long-term contractors, 123,019 acre-feet transferred to or exchanged with WWD, 115 acre-feet transferred to Tracy Golf Course and Country Club, 75,000 acre-feet of purchase pool water, and 20,288 acre-feet of interruptible water;
- 2,108 acre-feet of entitlement-related water for recreation, fish and wildlife; and
- 1,007,420 acre-feet of nonentitlement water delivered to satisfy water rights settlement agreements and agreements made with SWP contractors and other agencies, including USBR.

Figure 9-1 shows amounts of water delivered to various locations during 1998.

Specific information about water deliveries made to long-term contractors and other agencies during 1998 and historical deliveries from 1962 through 1998 are presented in the following three sections, each with a corresponding table:

- water delivered and future credits granted to long-term contractors in 1998 (Table 9-3);
- water delivered in 1998 by month (Table 9-4); and
- annual water entitlements and water conveyed, by water type, from 1962 through 1998 (Table 9-5).

[1] Annual entitlement water is the amount of SWP water long-term contractors may request each year in accordance with Article 12(a), "Procedure for Determining Water Delivery Schedule," of their water supply contract.

Water Deliveries and Credits to Long-Term SWP Contractors

Table 9-3 shows amounts of water delivered in 1998 and future entitlement credits granted to long-term contractors through 1998. The following information about specific columns in Table 9-3 is arranged by column number.

1998 Entitlement Water Delivered. Columns 1 through 4 show a detailed breakdown of entitlement water delivered to long-term water supply contractors in 1998.

1998 Interruptible Water. Column 5 shows 20,288 acre-feet of 1998 interruptible water delivered to long-term water supply contractors in 1998.

1997 Carryover Entitlement Water Delivered During 1998. In some instances, with the Department's approval, contractors may delay delivery of entitlement water to the next year (also known as carryover entitlement water). Column 6 shows 37,252 acre-feet of entitlement water was carried over from 1997 for delivery in 1998.

Article 12(d) Water. No Article 12(d) water was delivered in 1998. (See column 7.)

Article 14(b) Water. Column 8 shows 17,180 acre-feet of 1997 entitlement water delivered in 1998 under Article 14(b) of MWD's long-term water supply contract due to SWP outages in 1997.

Purchase Pool A Water. No Purchase Pool A water was delivered in 1998. (See column 9.)

Purchase Pool B Water. Column 10 shows 75,000 acre-feet of Purchase Pool B water delivered to two long-term water supply contractors in 1998.

Total Entitlement Water Delivered. Column 11 shows all entitlement water delivered in 1998—a total of 1,745,807 acre-feet. This amount includes 123,019 acre-feet of entitlement water transferred to or exchanged with WWD and 115 acre-feet of entitlement transferred to Tracy Golf Course and Country Club.

Other Water Deliveries. Column 12 includes deliveries of water other than entitlement water, such as

deliveries of nonproject water, to long-term water contractors. Nonproject water is generally local water that a SWP contractor has a water right to, or water purchased from or exchanged with non-SWP agencies. The water is conveyed by the Department and in some instances stored in SWP facilities under special agreements for future deliveries.

In 1998, other water deliveries totaled 99,252 acre-feet.

Total Deliveries. Column 13 shows total amounts of water delivered to long-term contractors. In 1998, the SWP delivered 1,845,059 acre-feet to 27 long-term contractors. This amount included 1,745,807 acre-feet of entitlement water and 99,252 acre-feet of nonproject water.

Carryover Water Approved for Delivery. For several years, the Department has offered contractors the opportunity to carry over a portion of their entitlement water approved for delivery in the current year for delivery during the next year. The carryover program was designed to encourage the most effective and beneficial use of water and to avoid obligating the contractors to use or lose the water by December 31 of each year. The SWP contractors' long-term contracts and amendments state the criteria of carrying over entitlement water from one year to the next. The exception is EWSID's contract, which has an ongoing carryover program with terms and conditions specified in an agreement between the Department and the district dated October 1, 1979.

In 1998, since all the SWP storage facilities were needed for project water, no carryover water was approved for future delivery.

Water Delivered in 1998, by Month

During 1998, the SWP provided water service to 43 agencies, including 27 long-term water contractors. Those agencies and the amounts of water delivered to them by month are listed in Table 9-4.

This section and the accompanying table summarize water deliveries for 1998. Information about those deliveries is categorized as SWP water and nonproject water.

State Water Project Water

SWP water is classified into the following categories:

Entitlement water
- current year entitlement (1998)
- interruptible entitlement (1998)
- transfer and exchange entitlement (1998)
- carryover entitlement (1997)
- Benicia and Vallejo entitlement (1998)
- stored entitlement (1998)
- Pool B entitlement (1998)
- makeup 14(b) entitlement (1997)

Recreation and fish and wildlife water
- enhancement
- mitigation

Operational flood release water
- operational flood release

The SWP may approve exchanges and transfers of entitlement water among various contractors if certain conditions are met. The SWP may temporarily loan water to contractors if satisfactory arrangements are made for repayment and water is available within the system.

In 1998, SWP water was delivered in the following classifications and amounts.

Entitlement Water. A total of 1,745,807 acre-feet of 1998 entitlement water was delivered to 27 long-term contractors.

Transfers and Exchanges of Entitlement Water. During 1998, a total of 147,569 acre-feet of entitlement water was transferred to or exchanged between SWP long-term contractors and non-SWP water agencies as follows:

- SCWA exchanged with MWA, 2,000 acre-feet;
- DRWD transferred to WWD, 200 acre-feet;
- DRWD transferred to TLBWSD, 90 acre-feet;
- KCWA exchanged with WWD, 85,700 acre-feet;
- KCWA transferred to WWD, 34,119 acre-feet;
- KCWA exchanged with TLBWSD and WWD, 20,000 acre-feet;
- KCWA transferred to TLBWSD, 1,000 acre-feet;
- OFWD transferred to Tracy Golf Course and Country Club, 115 acre-feet;
- TLBWSD transferred to WWD, 3,000 acre-feet; and
- MWA transferred to AVEKWA, 1,345 acre-feet.

Table 9-3
Water Delivered to Long-Term Contractors through 1998, by Service Area
(Acre-Feet)

Water Contractor or Agency	Water Deliveries in 1998												
	Entitlement Water Deliveries											Other Water Deliveries (12) [a]	Total Deliveries (13)
	1998 Entitlement without Transfers, Exchanges, and Storage (1)	1998 Entitlement Delivered through Transfers and Exchanges (2)	1998 Entitlement Delivered to Storage (3)	Total 1998 Entitlement Delivered (4)	1998 Interruptible Water (5)	1997 Carryover Entitlement Delivered during 1998 (6)	Makeup Water Per Article 12(d) (7)	Makeup Water Per Articles 14(b) (8)	Purchase Pool A (9)	Purchase Pool B (10)	Total Entitlement (11)		
Feather River Area													
County of Butte	527			527							527		527
Plumas County FCWCD	0			0							0		0
City of Yuba City	1,054			1,054							1,054		1,054
North Bay Area													
Napa County FCWCD	5,359			5,359							5,359		5,359
Solano County WA	19,377			19,377	9,982	407 [p]					29,766		29,766
South Bay Area													
Alameda County FCWCD-Zone 7	15,971		1,970	17,941							17,941	25,073 [b]	43,014
Alameda County WD	15,295		3,780	19,075							19,075	11,285 [c]	30,360
Santa Clara Valley WD	38,726		23,800	62,526		884 [p]					63,410		63,410
San Joaquin Valley Area													
Castaic Lake WA	311			311							311		311
County of Kings	3			3	12						15		15
Dudley Ridge WD	47,688	200 [d]	4,941	52,829	984	1,747 [q]					55,560		55,560
Empire West Side ID	0			0		542 [q]					542		542
Kern County WA	716,771	119,819 [e]		836,590							836,590	20,000 [f]	856,590
Oak Flat WD	4,286	115 [g]		4,401							4,401		4,401
Tulare Lake Basin WSD	8,367	24,090 [h]		32,457	9,310						41,767		41,767
Central Coastal Area													
San Luis Obispo County FCWCD	3,592			3,592							3,592		3,592
Santa Barbara County FCWCD	18,618			18,618							18,618		18,618
Southern California													
Antelope Valley-East Kern WA	52,926	1,345 [i]		54,271							54,271		54,271
Castaic Lake WA	19,782			19,782							19,782		19,782
Coachella Valley WD	23,100			23,100						55,000	78,100	7,609 [j]	85,709
Crestline-Lake Arrowhead WA	187			187							187	517 [k]	704
Desert WA	38,100			38,100						20,000	58,100	12,547 [l]	70,647
Littlerock Creek ID	404			404							404		404
Metropolitan WDSC	309,002 [m]		50,211	359,213		33,672 [p]		17,180			410,065	22,221 [n]	432,286
Mojave WA	2,580	2,000 [o]		4,580							4,580		4,580
Palmdale WD	8,752			8,752							8,752		8,752
San Bernardino Valley MWD	1,878			1,878							1,878		1,878
San Gabriel Valley MWD	9,310			9,310							9,310		9,310
San Gorgonio Pass WA	0			0							0		0
Ventura County FCD	1,850			1,850							1,850		1,850
Total	**1,363,816**	**147,569**	**84,702**	**1,596,087**	**20,288**	**37,252**	**0**	**17,180**	**0**	**75,000**	**1,745,807**	**99,252**	**1,845,059**

[a] Includes local, general wheeling, USBR exchange, and floodwater.
[b] Includes 6,000 acre-feet general wheeling, and 19,073 acre-feet local water.
[c] 11,285 acre-feet local water.
[d] 200 acre-feet transferred to Westlands WD.
[e] Includes 87,384 and 32,435 acre-feet exchanged and transferred to Westlands WD, respectively.
[f] 20,000 acre-feet exchanged from USBR through Westlands WD.
[g] 115 acre-feet transferred to Tracy Golf and CC.
[h] Includes 1,000 and 20,000 acre-feet transferred and exchanged from Kern County WA, respectively, 90 acre-feet transferred from Dudley Ridge WD, and 3,000 acre-feet transferred to Westlands WD.
[i] 1,345 acre-feet transferred from Mojave WA.
[j] 7,609 acre-feet floodwater.
[k] 517 acre-feet local water.
[l] 12,547 acre-feet floodwater.
[m] Includes 37,000 acre-feet bypass water.
[n] Includes 11,100 acre-feet exchanged from USBR,10,121 acre-feet floodwater, and 1,000 acre-feet general wheeling.
[o] 2,000 acre-feet changed from Solano County WA.
[p] Extended carryover delivery.
[q] Carryover delivery.

Table 9-4
Water Delivered in 1998, by Month
(Acre-Feet)

Contracting Agency and Type of Service	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*1998 Total Deliveries*	*1998 Contract Entitlement*
Feather River Area														
City of Yuba City														
Entitlement water	0	0	0	0	0	0	508	546	0	0	0	0	1,054	9,600
County of Butte														
Entitlement water	86	44	103	42	129	11	1	1	2	1	74	33	527	1,200
Plumas County Flood Control and Water Conservation District														
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	1,400
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	0	0	0	0	0	0	0	0	1	0	0	0	1	
Last Chance Creek Water District														
Regulated delivery of local supply	0	0	0	0	0	0	3,027	4,687	1,525	559	248	0	10,046	
Thermalito Irrigation District														
Regulated delivery of local supply	89	86	98	110	124	219	413	416	298	204	105	109	2,271	
Oroville-Wyandotte Irrigation District														
Regulated delivery of local supply	102	6	62	139	414	674	1,170	1,230	1,190	982	350	154	6,473	
Western Canal Water District														
Regulated delivery of local supply	2,205	0	0	260	35,701	29,240	56,234	48,344	12,353	24,408	24,301	8,751	241,797	
Joint Water Districts Board														
Regulated delivery of local supply	13,340	0	0	1,333	68,910	86,490	118,262	114,177	58,620	39,150	46,760	40,620	587,662	
Oswald Water District														
Regulated delivery of local supply	0	0	0	0	0	127	339	234	120	31	0	0	851	
Tudor Mutual Water Company														
Regulated delivery of local supply	0	0	0	0	0	383	711	683	307	28	0	0	2,112	
Garden Highway Mutual Water Company														
Regulated delivery of local supply	0	0	0	177	2,410	2,870	3,465	3,418	1,345	0	0	0	13,685	
Plumas Mutual Water Company														
Regulated delivery of local supply	0	0	0	0	0	1,110	2,386	1,754	2,181	410	0	0	7,841	
SWP	86	44	103	42	129	11	509	547	3	1	74	33	1,582	
Non-SWP	15,736	92	160	2,019	107,559	121,113	186,007	174,943	77,939	65,772	71,764	49,634	872,738	
Feather River Area Total	**15,822**	**136**	**263**	**2,061**	**107,688**	**121,124**	**186,516**	**175,490**	**77,942**	**65,773**	**71,838**	**49,667**	**874,320**	**12,200**
North Bay Area														
Napa County Flood Control and Water Conservation District														
Entitlement water	776	803	575	542	158	180	293	332	248	165	412	875	5,359	11,710
Solano County Water Agency														
Entitlement water	92	708	636	330	123	580	880	854	1,815	253	125	121	6,517	38,710
Entitlement water to Benicia	38	531	869	842	781	500	353	379	1,292	1,103	833	961	8,482	
Entitlement water to Vallejo	0	0	0	358	644	468	315	315	803	471	230	774	4,378	
Interruptible entitlement water	58	482	0	0	614	1,497	3,549	3,782	0	0	0	0	9,982	
Extended carryover entitlement water	407	0	0	0	0	0	0	0	0	0	0	0	407	
Exchange entitlement water to Mojave Water Agency *	0	0	0	0	0	0	0	0	0	0	1,782	218	2,000	
Agency Total (* Exchange entitlement water excluded)	595	1,721	1,505	1,530	2,162	3,045	5,097	5,330	3,910	1,827	1,188	1,856	29,766	
SWP	1,371	2,524	2,080	2,072	2,320	3,225	5,390	5,662	4,158	1,992	1,600	2,731	35,125	
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	
North Bay Area Total	**1,371**	**2,524**	**2,080**	**2,072**	**2,320**	**3,225**	**5,390**	**5,662**	**4,158**	**1,992**	**1,600**	**2,731**	**35,125**	**50,420**
South Bay Area														
Alameda County Flood Control and Water Conservation District, Zone 7														
Entitlement water	0	0	0	0	0	0	214	5,102	3,693	2,635	2,487	1,840	15,971	46,000
General Wheeling	0	0	0	0	0	0	0	700	700	600	0	0	2,000	
Local water	1,708	1,199	1,554	1,699	2,559	4,488	5,088	60	22	0	272	424	19,073	
Stored entitlement water	0	0	0	0	0	0	1,970	0	0	0	0	0	1,970	
General Wheeling to storage for San Benito	0	0	0	0	0	0	4,000	0	0	0	0	0	4,000	
Agency Total	1,708	1,199	1,554	1,699	2,559	4,488	11,272	5,862	4,415	3,235	2,759	2,264	43,014	
Alameda County Water District														
Entitlement water	0	0	0	0	0	0	1,911	2,708	3,077	1,840	1,436	4,323	15,295	42,000
Stored entitlement water	0	0	0	0	0	0	3,780	0	0	0	0	0	3,780	
Local water	1,758	413	1,711	2,057	2,330	2,249	767	0	0	0	0	0	11,285	
Agency Total	1,758	413	1,711	2,057	2,330	2,249	6,458	2,708	3,077	1,840	1,436	4,323	30,360	

Table 9-4
Water Delivered in 1998, by Month
(Acre-Feet)

Contracting Agency and Type of Service	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*1998 Total Deliveries*	*1998 Contract Entitlement*
Santa Clara Valley Water District														
Entitlement water	349	0	339	1,047	2,909	5,665	7,018	7,666	5,842	3,922	2,027	1,942	38,726	100,000
Extended carryover entitlement water	884	0	0	0	0	0	0	0	0	0	0	0	884	
Stored entitlement water	0	0	0	0	0	23,800	0	0	0	0	0	0	23,800	
Agency Total	1,233	0	339	1,047	2,909	29,465	7,018	7,666	5,842	3,922	2,027	1,942	63,410	
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	0	1	2	4	8	14	24	21	20	12	5	3	114	
SWP	1,233	1	341	1,051	2,917	29,479	14,917	15,497	12,632	8,409	5,955	8,108	100,540	
Non-SWP	3,466	1,612	3,265	3,756	4,889	6,737	9,855	760	722	600	272	424	36,358	
South Bay Area Total	**4,699**	**1,613**	**3,606**	**4,807**	**7,806**	**36,216**	**24,772**	**16,257**	**13,354**	**9,009**	**6,227**	**8,532**	**136,898**	**188,000**
San Joaquin Valley Area														
Castaic Lake Water Agency														
Entitlement water	0	0	0	113	107	85	6	0	0	0	0	0	311	12,700
County of Kings														
Entitlement water	3	0	0	0	0	0	0	0	0	0	0	0	3	4,000
Interruptible entitlement water	12	0	0	0	0	0	0	0	0	0	0	0	12	
Agency Total	15	0	0	0	0	0	0	0	0	0	0	0	15	
Dudley Ridge Water District														
Entitlement water	43	4	733	944	777	6,210	11,642	12,628	6,465	3,331	2,742	2,169	47,688	53,370
Interruptible entitlement water	411	573	0	0	0	0	0	0	0	0	0	0	984	
Carryover entitlement water	1,747	0	0	0	0	0	0	0	0	0	0	0	1,747	
Stored entitlement water	0	0	0	0	0	0	0	0	56	4,585	0	300	4,941	
Transfer entitlement water to Westlands Water District *	0	0	0	0	0	0	0	0	0	150	50	0	200	
Transfer entitlement water to Tulare Lake Basin WSD *	0	0	0	0	0	0	90	0	0	0	0	0	90	
Agency Total (* excluded water)	2,201	577	733	944	777	6,210	11,642	12,628	6,521	7,916	2,742	2,469	55,360	
Empire West Side Irrigation District														
Carryover entitlement water	542	0	0	0	0	0	0	0	0	0	0	0	542	3,000
Kern County Water Agency														
Entitlement water	45,386	4,835	6,347	14,569	27,266	58,541	149,012	180,157	95,526	55,513	24,244	55,375	716,771	1,087,730
Exchange water from USBR through Westlands Water District	0	12,690	6,000	1,310	0	0	0	0	0	0	0	0	20,000	
Exchange entitlement water to Westlands Water District *	0	0	0	0	7,562	12,550	38,023	27,565	0	0	0	0	85,700	
Transfer entitlement water to Westlands Water District *	0	0	0	0	0	0	15,000	17,435	0	0	0	0	32,435	
Exchange carryover entitlement water to Westlands Water District *	1,684	0	0	0	0	0	0	0	0	0	0	0	1,684	
Exchange entitlement water to Tulare Lake Basin WSD *	0	0	0	0	0	0	0	0	0	0	4,864	15,136	20,000	
Transfer entitlement water to Tulare Lake Basin WSD *	0	0	0	0	0	0	600	0	0	0	0	400	1,000	
Exchange entitlement water to MWD * [a]	0	0	0	0	0	0	0	0	0	0	0	1,000	1,000	
Agency Total (* excluded water)	45,386	17,525	12,347	15,879	27,266	58,541	149,012	180,157	95,526	55,513	24,244	55,375	736,771	
Oak Flat Water District														
Entitlement water	1	0	24	76	218	809	1,124	1,130	594	277	12	21	4,286	5,700
Transfer entitlement water to Tracy Golf and CC *	0	0	0	0	0	0	0	19	47	31	8	10	115	
Agency Total (* excluded water)	1	0	24	76	218	809	1,124	1,130	594	277	12	21	4,286	
Tulare Lake Basin Water Storage District														
Entitlement water	0	0	0	117	13	228	1,154	3,035	2,068	470	304	978	8,367	118,500
Interruptible entitlement water	9,095	153	62	0	0	0	0	0	0	0	0	0	9,310	
Transfer entitlement water from Kern County WA	0	0	0	0	0	0	0	600	0	-	0	400	1,000	
Exchange entitlement water from Kern County WA	0	0	0	0	0	0	0	0	0	0	4,864	15,136	20,000	
Transfer entitlement water from Dudley Ridge WD	0	0	0	0	0	0	90	0	0	0	0	0	90	
Transfer entitlement water to Westlands Water District *	0	0	0	0	0	0	0	3,000	0	0	0	0	3,000	
Agency Total (* excluded water)	9,095	153	62	117	13	228	1,244	3,635	2,068	470	5,168	16,514	38,767	
Westlands Water District														
Transfer entitlement water from Kern County WA	0	0	0	0	0	0	15,000	17,435	0	0	0	0	32,435	
Transfer entitlement water from Tulare Lake Basin WSD	0	0	0	0	0	0	0	3,000	0	0	0	0	3,000	
Transfer entitlement water from Dudley Ridge WD	0	0	0	0	0	0	0	0	0	150	50	0	200	
Exchange extended carryover entitlement from Kern County WA	1,684	0	0	0	0	0	0	0	0	0	0	0	1,684	
Exchange entitlement water from Kern County WA	0	0	0	0	7,562	12,550	38,023	27,565	0	0	0	0	85,700	

Table 9-4
Water Delivered in 1998, by Month
(Acre-Feet)

Contracting Agency and Type of Service	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*1998 Total Deliveries*	*1998 Contract Entitlement*
Transfer DCVWLNG water from Lower Tule River [b]	0	0	0	0	0	0	0	0	0	6,637	113	0	6,750	
Transfer DCVWLNG water from Pixley ID [b]	0	0	0	0	0	0	0	0	0	6,636	114	0	6,750	
Kings River Water Conveyance to Westlands Water District	0	0	0	667	3,482	2,968	0	0	0	0	0	0	7,117	
USBR exchange water to Kern County WA *	0	12,690	6,000	1,310	0	0	0	0	0	0	0	0	20,000	
Agency Total (* excluded water)	1,684	0	0	667	11,044	15,518	53,023	48,000	0	13,423	277	0	143,636	
Departments of Fish and Game/Parks and Recreation														
Department of Fish and Games' recreation/fish and wildlife water	13	0	0	1	0	0	0	7	0	88	147	80	336	
Parks and Recreations' recreation/fish and wildlife water	2	1	2	2	3	12	11	16	12	9	0	2	72	
Agency Total	15	1	2	3	3	12	11	23	12	97	147	82	408	
SWP	58,939	5,566	7,168	15,822	35,946	78,435	216,062	245,573	104,721	64,423	32,363	74,461	939,479	
Non-SWP	0	12,690	6,000	1,977	3,482	2,968	0	0	0	13,273	227	0	40,617	
San Joaquin Valley Area subtotal	58,939	18,256	13,168	17,799	39,428	81,403	216,062	245,573	104,721	77,696	32,590	74,461	980,096	1,285,000
San Joaquin Valley Area														
Tracy Golf and CC [c]	0	0	0	0	0	0	0	19	47	31	8	10	115	
CVP Water Conveyed														
Musco Olive Products, Inc.	36	28	36	33	30	24	33	5	15	46	42	36	364	
Veterans Administration Cemetery	1	1	1	2	3	4	5	5	4	3	3	2	34	
Subtotal	37	29	37	35	33	28	38	29	66	80	53	48	513	
Cross Valley Canal Contracts														
DCVWLNG water to Westlands WD from Lower Tule River *	0	0	0	0	0	0	0	0	0	6,637	113	0	6,750	
DCVWLNG water to Westlands WD from Pixley ID *	0	0	0	0	0	0	0	0	0	6,636	114	0	6,750	
Subtotal (* excluded water)	0	0	0	0	0	0	0	0	0	0	0	0	0	
U.S. Bureau Of Reclamation														
Federal wheeling [d]	1,101	0	0	0	0	0	0	1,673	3,077	3,831	3,551	848	14,081	
Recreation/fish and wildlife water (San Luis)	11	1	1	5	3	10	9	16	12	76	125	65	334	
Exchange water to MWD * [e]	5,550	5,550	0	0	0	0	0	0	0	0	0	0	11,100	
DWR wheeling for USBR * [f]	0	0	0	0	0	0	0	0	0	0	0	14,190	14,190	
USBR wheeling for the Department * [f]	0	0	12,497	1,513	0	0	0	0	0	0	0	0	14,010	
USBR O'Neil Forebay share reallocation to the Department * [f]	0	0	0	0	0	0	0	0	0	0	0	210	210	
DWR O'Neil Forebay share reallocation to USBR * [f]	0	0	0	0	0	0	0	0	0	0	0	30	30	
Subtotal (* excluded water)	1,112	1	1	5	3	10	9	1,689	3,089	3,907	3,676	913	14,415	
SWP	0	0	0	0	0	0	0	19	47	31	8	10	115	
Non-SWP	1,149	30	38	40	36	38	47	1,699	3,108	3,956	3,721	951	14,813	
San Joaquin Valley Area subtotal	1,149	30	38	40	36	38	47	1,718	3,155	3,987	3,729	961	14,928	
Area Summary														
SWP	58,939	5,566	7,168	15,822	35,946	78,435	216,062	245,592	104,768	64,454	32,371	74,471	939,594	
Non-SWP	1,149	12,720	6,038	2,017	3,518	3,006	47	1,699	3,108	17,229	3,948	951	55,430	
San Joaquin Valley Area Total	**60,088**	**18,286**	**13,206**	**17,839**	**39,464**	**81,441**	**216,109**	**247,291**	**107,876**	**81,683**	**36,319**	**75,422**	**995,024**	**1,285,000**
Central Coastal Area														
San Luis Obispo County Flood Control and Water Conservation District														
Entitlement water	301	263	298	293	235	334	423	409	364	339	187	146	3,592	6,215
Santa Barbara County Flood Control and Water Conservation District														
Entitlement water	945	859	1,058	1,098	1,032	1,926	2,403	2,588	2,161	2,118	1,408	1,022	18,618	38,986
SWP	1,246	1,122	1,356	1,391	1,267	2,260	2,826	2,997	2,525	2,457	1,595	1,168	22,210	
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	
Central Coastal Area Total	**1,246**	**1,122**	**1,356**	**1,391**	**1,267**	**2,260**	**2,826**	**2,997**	**2,525**	**2,457**	**1,595**	**1,168**	**22,210**	**45,201**

Table 9-4
Water Delivered in 1998, by Month
(Acre-Feet)

Contracting Agency and Type of Service	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*1998 Total Deliveries*	*1998 Contract Entitlement*
Southern California Area														
Antelope Valley-East Kern Water Agency														
Entitlement water	1,311	889	1,603	2,747	4,972	7,300	9,508	9,737	5,862	4,433	2,448	2,116	52,926	138,400
Transfer entitlement water from Mojave Water Agency	54	57	111	89	128	150	175	210	137	102	71	61	1,345	
Agency Total	1,365	946	1,714	2,836	5,100	7,450	9,683	9,947	5,999	4,535	2,519	2,177	54,271	
Castaic Lake Water Agency														
Entitlement water	946	641	1,048	1,414	1,522	2,186	3,102	3,136	2,289	1,601	918	979	19,782	41,500
Coachella Valley Water District														
Entitlement water	754	0	0	2,541	2,541	2,541	2,541	2,541	2,541	2,541	2,541	2,018	23,100	23,100
Floodwater	0	0	0	0	3,515	4,094	0	0	0	0	0	0	7,609	
Purchase Pool B entitlement water	0	0	0	0	11,000	11,000	11,000	11,000	11,000	0	0	0	55,000	
Agency Total	754	0	0	2,541	17,056	17,635	13,541	13,541	13,541	2,541	2,541	2,018	85,709	
Crestline-Lake Arrowhead Water Agency														
Entitlement water	0	0	18	0	0	0	0	0	10	58	41	60	187	5,800
Local water	62	55	17	30	35	41	103	100	74	0	0	0	517	
Agency Total	62	55	35	30	35	41	103	100	84	58	41	60	704	
Desert Water Agency														
Entitlement water	0	789	381	4,191	4,191	4,191	4,191	4,191	4,191	4,191	4,191	3,402	38,100	38,100
Floodwater	0	0	0	0	5,795	6,752	0	0	0	0	0	0	12,547	
Purchase Pool B entitlement water	0	0	0	0	4,000	4,000	4,000	4,000	4,000	0	0	0	20,000	
Agency Total	0	789	381	4,191	13,986	14,943	8,191	8,191	8,191	4,191	4,191	3,402	70,647	
Littlerock Creek Irrigation District														
Entitlement water	0	0	0	24	53	76	91	65	48	47	0	0	404	2,300
Metropolitan Water District of Southern California														
Entitlement water	2,823	19,184	19,246	42,183	21,909	23,810	36,451	36,987	15,736	29,599	14,391	9,683	272,002	2,011,500
Bypass entitlement water	0	0	1,975	233	945	0	3,001	9,271	7,256	14,319	0	0	37,000	
Stored entitlement water	0	436	7,200	10,000	14,000	0	150	1,759	12,519	4,147	0	0	50,211	
Extended Carryover entitlement water	33,672	0	0	0	0	0	0	0	0	0	0	0	33,672	
14B (Makeup) entitlement water	0	0	0	0	0	0	6,000	6,000	5,180	0	0	0	17,180	
Floodwater	0	0	0	10,121	0	0	0	0	0	0	0	0	10,121	
Exchange water from USBR [e]	5,550	5,550	0	0	0	0	0	0	0	0	0	0	11,100	
General Wheeling [g]	0	0	0	0	0	0	0	0	0	0	0	1,000	1,000	
Agency Total	42,045	25,170	28,421	62,537	36,854	23,810	45,602	54,017	40,691	48,065	14,391	10,683	432,286	
Mojave Water Agency														
Entitlement water	672	212	16	0	287	277	195	147	242	256	186	90	2,580	75,800
Exchange entitlement water from Solano County WA	0	0	0	0	0	0	0	0	0	0	1,782	218	2,000	
Transfer entitlement water to Antelope Valley-East Kern WA *	54	57	111	89	128	150	175	210	137	102	71	61	1,345	
Agency Total (* excluded water)	672	212	16	0	287	277	195	147	242	256	1,968	308	4,580	
Palmdale Water District														
Entitlement water	1,221	121	0	0	79	691	1,234	1,578	1,611	1,003	609	605	8,752	17,300
San Bernardino Valley Municipal Water District														
Entitlement water	65	39	47	60	64	83	315	552	452	111	48	42	1,878	102,600
San Gabriel Valley Municipal Water District														
Entitlement water	0	1,231	2,844	357	105	711	1,100	982	1,198	635	147	0	9,310	28,800
San Gorgonio Pass Water Agency														
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ventura County Flood Control District														
Entitlement water	0	0	0	0	0	0	0	0	0	617	617	616	1,850	20,000
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	56	32	55	68	149	145	247	299	188	168	107	71	1,585	
SWP	41,574	23,631	34,544	63,907	65,945	57,161	83,301	92,455	74,460	63,828	28,097	19,961	648,864	
Non-SWP	5,612	5,605	17	10,151	9,345	10,887	103	100	74	0	0	1,000	42,894	
Southern California Area Total	**47,186**	**29,236**	**34,561**	**74,058**	**75,290**	**68,048**	**83,404**	**92,555**	**74,534**	**63,828**	**28,097**	**20,961**	**691,758**	**2,505,200**

Table 9-4
Water Delivered in 1998, by Month
(Acre-Feet)

Contracting Agency and Type of Service	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*1998 Total Deliveries*	*1998 Contract Entitlement*
SWP Water														
SWP entitlement water														
Agriculture and M&I entitlement water	55,774	30,622	35,316	72,688	68,690	116,435	235,317	277,072	156,035	115,956	61,595	88,456	1,313,956	4,086,021
Interruptible entitlement water	9,576	1,208	62	0	614	1,497	3,549	3,782	0	0	0	0	20,288	
Transfer entitlement water	1,738	57	111	89	128	150	15,265	21,264	184	283	129	471	39,869	
Exchange entitlement water	0	0	0	0	7,562	12,550	38,023	27,565	0	0	6,646	15,354	107,700	
Stored entitlement water	0	436	7,200	10,000	14,000	23,800	5,900	1,759	12,575	8,732	0	300	84,702	
Benicia entitlement water	38	531	869	842	781	500	353	379	1,292	1,103	833	961	8,482	
Vallejo entitlement water	0	0	0	358	644	468	315	315	803	471	230	774	4,378	
Purchase Pool A entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	
Purchase Pool B entitlement water	0	0	0	0	15,000	15,000	15,000	15,000	15,000	0	0	0	75,000	
Bypass entitlement water	0	0	1,975	233	945	0	3,001	9,271	7,256	14,319	0	0	37,000	
Makeup 14B entitlement water	0	0	0	0	0	0	6,000	6,000	5,180	0	0	0	17,180	
Carryover entitlement water	2,289	0	0	0	0	0	0	0	0	0	0	0	2,289	
Extended carryover entitlement water	34,963	0	0	0	0	0	0	0	0	0	0	0	34,963	
Subtotal (Entitlement water)	104,378	32,854	45,533	84,210	108,364	170,400	322,723	362,407	198,325	140,864	69,433	106,316	1,745,807	
SWP entitlement-related water														
Recreation/fish and wildlife water	71	34	59	75	160	171	282	343	221	277	259	156	2,108	
Subtotal (entitlement-related water)	71	34	59	75	160	171	282	343	221	277	259	156	2,108	
Subtotal (SWP water)	***104,449***	***32,888***	***45,592***	***84,285***	***108,524***	***170,571***	***323,005***	***362,750***	***198,546***	***141,141***	***69,692***	***106,472***	***1,747,915***	
Nonentitlement Water														
Other water														
Wheeling local water	19,264	1,759	3,442	5,805	112,483	127,891	191,965	175,103	78,035	65,772	72,036	50,058	903,613	
General wheeling	0	0	0	0	0	0	4,000	700	700	600	0	1,000	7,000	
Floodwater	0	0	0	10,121	9,310	10,846	0	0	0	0	0	0	30,277	
Subtotal (other water)	***19,264***	***1,759***	***3,442***	***15,926***	***121,793***	***138,737***	***195,965***	***175,803***	***78,735***	***66,372***	***72,036***	***51,058***	***940,890***	
CVP Water														
Transferred DCVWLNG water [b]	0	0	0	0	0	0	0	0	0	13,273	227	0	13,500	
Exchange water (to Kern County WA through Westlands Water District)	0	12,690	6,000	1,310	0	0	0	0	0	0	0	0	20,000	
Exchange water (to MWD)	5,550	5,550	0	0	0	0	0	0	0	0	0	0	11,100	
Conveying CVP water annual contract	37	29	37	35	33	28	38	10	19	49	45	38	398	
Conveying CVP water (Kern National Wildlife Refuge USBR)	1,101	0	0	0	0	0	0	1,673	3,077	3,831	3,551	848	14,081	
Conveying CVP water (recreation/fish and wildlife water—San Luis)	11	1	1	5	3	10	9	16	12	76	125	65	334	
Conveying CVP water (Kings River water to Westlands Water District)	0	0	0	667	3,482	2,968	0	0	0	0	0	0	7,117	
Subtotal (CVP water)	***6,699***	***18,270***	***6,038***	***2,017***	***3,518***	***3,006***	***47***	***1,699***	***3,108***	***17,229***	***3,948***	***951***	***66,530***	
Subtotal (nonentitlement water)	***25,963***	***20,029***	***9,480***	***17,943***	***125,311***	***141,743***	***196,012***	***177,502***	***81,843***	***83,601***	***75,984***	***52,009***	***1,007,420***	
Grand Total	**130,412**	**52,917**	**55,072**	**102,228**	**233,835**	**312,314**	**519,017**	**540,252**	**280,389**	**224,742**	**145,676**	**158,481**	**2,755,335**	**4,086,021**

[a] Exchange entitlement with Tulare from Delta to Reach 13B then, wheeled to Reach 26A for delivery as nonentitlement water to Western Water Company through MWD.

[b] DCVWLNG* water transferred to Westlands Water District from Lower Tule River and Pixley ID.
* (DCVWLNG = Water wheeled by DWR directly to Cross Valley Canal Contractors.)

[c] Transfer of Oak Flat entitlement water

[d] Kern National Wildlife Refuge USBR.

[e] 1997 Exchange between USBR and MWD. Remainder to be delivered in 1999.

[f] 1998 Wheeling Exchange Agreement between USBR and the Department for 14,220 AF. O'Neil Forebay was used to compensate for the difference between the agreement amount and the amounts wheeled between the parties.

[g] Exchange entitlement water from Kern County WA from the Delta to reach 13B. Reclassified to nonproject water and wheeled to reach 26A for delivery to Western Water Company through MWD.

Table 9-5
Total Amounts of Annual Water Entitlements and Water Conveyed, by Type, 1962-98
(Acre-Feet)

Year	Annual Entitlements According to Long-Term Water Supply Contract							Water Conveyed								Total (16)
	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)	Entitlement Water [a] (8)	Surplus and Unscheduled Water [b] (9)	Other Water [c] (10)	Feather River Diversions [d] (11)	Recreation Water (12)	Subtotal (13)	Initial Fill Water (14)	Operational Losses and Storage Changes [e] (15)	
1962	0	0	0	0	0	0	0	0	0	18,289		0	18,289	9	272	18,570
1963	0	0	0	0	0	0	0	0	0	22,456		0	22,456	71	185	22,712
1964	0	0	0	0	0	0	0	0	0	32,507		0	32,507	171	152	32,830
1965	0	0	0	0	0	0	0	0	0	44,105		0	44,105	93	729	44,927
1966	0	0	0	0	0	0	0	0	0	67,928		0	67,928	0	1,746	69,674
1967	0	0	11,538	0	0	0	11,538	11,538	0	53,605		0	65,143	8,328	4,212	77,683
1968	550	0	109,900	81,050	0	0	191,500	171,709	121,534	14,777	866,926	0	1,174,946	498,926	117,906	1,791,778
1969	620	0	98,700	168,075	0	0	267,395	193,020	72,397	18,829	794,374	0	1,078,620	510,614	72,196	1,661,430
1970	700	0	114,200	207,700	0	0	322,600	233,993	133,024	38,080	759,759	0	1,164,856	23,947	2,435	1,191,238
1971	890	0	116,200	258,500	0	0	375,590	357,340	296,019	44,119	778,362	8	1,475,848	7,853	5,812	1,489,513
1972	970	0	118,300	420,766	0	201,723	741,759	611,801	423,964	66,638	817,398	6,489	1,926,290	100,274	53,062	2,079,626
1973	1,100	0	120,400	392,352	0	472,400	986,252	694,388	296,416	42,511	800,743	1,155	1,835,213	204,638	53,798	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	2,118	2,251,708	237,554	10,657	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	3,377	2,776,280	103,352	(94,606)	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	1,745	3,016,514	61,122	(681,025)	2,396,611
1977	2,420	0	128,600	594,100	0	942,201	1,667,321	574,155	0	389,065	581,994	1,111	1,546,325	0	(131,151)	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	1,691	2,379,046	64,443	717,370	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	1,766	3,380,230	12,302	(83,430)	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	2,131	2,857,941	0	(26,606)	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	4,688	3,940,396	0	(802,263)	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	4,646	2,901,755	0	480,752	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	7,849	1,990,095	0	(90,997)	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	7,040	3,071,932	0	(140,182)	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	4,033	3,582,008	0	92,885	3,674,893
1986	4,190	1,400	148,100	1,139,200	28,210	1,971,190	3,292,290	1,995,636 [f]	36,620 [g]	193,606	791,737	3,865	3,021,464	0	284,380	3,305,844
1987	4,620	1,550	150,300	1,201,200	35,204	2,091,241	3,484,115	2,130,086 [h]	114,907	377,592	831,947	7,672	3,462,204	0	(390,413)	3,071,791
1988	5,060	15,471	152,500	1,258,800	43,722	2,212,782	3,688,335	2,385,122 [i]	0	507,076	794,834	4,889	3,691,921	0	(92,850)	3,599,071
1989	5,500	24,615	156,700	1,303,100	56,342	2,411,933	3,958,190	2,853,747 [j]	0	474,559	830,500	8,135	4,166,941	0	447,917	4,614,858
1990	6,040	28,190	160,900	1,355,000	70,486	2,487,900	4,108,516	2,582,151 [k]	90	424,697	875,099	9,262	3,891,299	0	(528,869)	3,362,430
1991	11,880	29,590	166,400	1,355,000	70,486	2,497,500	4,130,856	549,113 [l]	3,521	551,051	565,395	4,879	1,673,959	0	167,435	1,841,394 0
1992	11,920	32,010	171,900	1,342,300	70,486	2,510,200	4,138,816	1,471,454 [m]	1,156	144,789	613,978	2,605	2,233,982	0	(63,541)	2,170,441
1993	11,960	34,620	177,400	1,342,300	70,486	2,510,200	4,146,966	2,315,235	0	254,854	822,589	2,609	3,395,287	0	726,123	4,121,410
1994	12,000	37,215	182,000	1,342,300	70,486	2,510,200	4,154,201	1,861,976	0	236,739	874,018	8,200	2,980,933	0	(295,405)	2,685,528
1995	12,050	44,030	184,000	1,342,300	70,486	2,510,200	4,163,066	2,031,423	0	78,425	860,077	2,575	2,972,500	0	69,536	3,042,036
1996	12,100	48,225	186,000	1,301,630	70,486	2,492,900	4,111,341	2,543,472	0	251,391	934,997	3,907	3,733,767	86	491,555	4,225,408
1997	12,150	49,315	188,000	1,310,000	44,871	2,480,200	4,084,536	2,347,207	0	322,000	993,211	4,146	3,666,564	527	(11,806)	3,655,285
1998	12,200	50,420	188,000	1,285,000	45,201	2,505,200	4,086,021	1,745,807	0	134,682	872,738	2,108	2,755,335	0	(132,491)	2,622,844
Total	**152,840**	**401,901**	**4,508,638**	**27,327,604**	**818,727**	**46,668,147**	**79,877,857**	**46,202,313**	**5,898,105**	**6,786,280**	**25,245,190**	**114,699**	**84,246,587**	**1,834,310**	**298,435**	**83,608,408**

[a] Includes interruptible deliveries (1994,1995, 1996, 1997, and 1998).

[b] 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).

[c] Includes amounts of SWP nonentitlement and non-SWP water conveyed for SWP and non-SWP water contractors.

[d] Includes amounts of water diverted under various water rights agreements.

[e] 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.

[f] Includes 37,170 acre-feet of entitlement water carried over from 1985.

[g] Includes 12,270 acre-feet of surplus water carried over from 1985.

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

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

[j] Includes 149,880 acre-feet of 1988 entitlement water delivered in 1989 and 89 acre-feet of 1990 entitlement water delivered during 1989.

[k] Includes 128,546 acre-feet of 1989 water delivered in 1990.

[l] Includes 27,075 acre-feet of 1990 entitlement water and 148 acre-feet of 1992 entitlement water delivered in 1991.

[m] Includes 92,282 acre-feet of 1991 entitlement water delivered in 1992: 3,484 acre-feet of makeup water: and 72,000 acre-feet recaptured from water storage (including 57,171 acre-feet of Groundwater Demonstration Program water).

An exchange between TLBWSD, MWD, KCWA, and WWC of 1,000 acre-feet was classified as general wheeling to MWD rather than an exchange.

Other Exchanges of Entitlement Water. In 1998, a total of 31,100 acre-feet of nonproject water was exchanged for project water as follows:

Kern County Water Agency. In a letter agreement between KCWA and the Department, dated April 2, 1997, WWD exchanged 20,000 acre-feet of its CVP water, stored by USBR in San Luis Reservoir, for an equivalent amount of KCWA's entitlement water. KCWA took delivery of the CVP water during February, March, and April.

Metropolitan Water District of Southern California. A letter agreement dated August 28, 1997, between MWD and the Department, approved the exchange of up to 52,000 acre-feet of MWD's 1997 SWP entitlement water to USBR in return for a like amount of water acquired by USBR for delivery to MWD by May 31, 1998. The actual amount of water exchanged with USBR was 37,000 acre-feet. USBR returned 25,900 acre-feet in 1997 and 11,100 acre-feet in 1998.

Carryover Entitlement Water. A total of 37,252 acre-feet of 1997 entitlement water was carried in SWP storage facilities and delivered in 1998.

Interruptible Entitlement Water. The interruptible entitlement water program allows a contractor to take delivery of water over the approved and scheduled allocations for the current year. Interruptible water is available for delivery on a short-term basis as determined by the Department, when scheduled project demands are being delivered and operational requirements for project water deliveries, water quality, and other requirements are being met.

In 1998, four contractors participated in the program. A total of 20,288 acre-feet of interruptible water was delivered to SCWA, County of Kings, DRWD, and TLBWSD.

Water for Recreation and Fish and Wildlife. A total of 2,108 acre-feet of SWP water was conveyed for recreational use and enhancement of fish and wildlife. Of this total, 1 acre-foot was conveyed in Butte County.

Recreational Use. The SWP delivered 549 acre-feet of water for facilities at Lake Del Valle, O'Neill Forebay, Silverwood Lake, and Lake Perris. In addition, 1,222 acre-feet were delivered to Castaic Lake and Castaic Lagoon, an impoundment downstream from Castaic Lake devoted entirely to recreation.

Trout Fishery. No water was needed from the SWP in 1998 to maintain a trout fishery in Piru Creek as a condition of obtaining a license from the Federal Energy Regulatory Commission to develop a powerplant at Pyramid Lake.

Wildlife Management. The SWP delivered 336 acre-feet of water to use in managing wildlife in the Pilibos Wildlife Area, located on about 770 acres of land near O'Neill Forebay, 40 miles south of Los Banos.

Operational Flood Release Water

There was no operational flood release water delivered in 1998.

Non-State Water Project Water

In 1998, the Department used SWP facilities to convey non-SWP water for various agencies according to the terms of water rights and water transfer and exchange agreements. Detailed information concerning those conveyances follows.

Alameda County Flood Control and Water Conservation District-Zone 7. Under a contract executed July 28, 1995, between the Department and ACFCWCD-Zone 7, the Department conveyed 2,000 acre-feet of non-SWP water for ACFCWCD-Zone 7 during 1998. The Department conveyed this water from August through October directly from the Delta to Reach 6 of the South Bay Aqueduct. ACFCWCD-Zone 7 purchased the rights to transfer this water from BBID under a separate contract.

Central Valley Project Water. In 1998, the Department conveyed 62,533 acre-feet of CVP water through SWP facilities. Conveyance was made in accordance with agreements negotiated with USBR and contractors receiving water from USBR through the Cross Valley Canal as follows:

Cross Valley Canal Contractors. Under two individual agreements between the Department and LTRID and PID, dated November 9, 1998, the Department conveyed 6,750 acre-feet of CVP water for each district to WWD's turnouts in Reach 4 and Reach 5 of the California Aqueduct.

Musco Olive Products, Incorporated. In accordance with terms of a conveyance agreement with USBR, dated January 20, 1998, the Department conveyed 364 acre-feet of CVP water to Reach 2A of the California Aqueduct for Musco Olive Products, Inc.

Recreational and Wildlife Use. In 1998, the Department conveyed 334 acre-feet of CVP water to DFG at O'Neill Forebay and WWD's Lateral 4L within Reach 5 of the joint-use facilities of the California Aqueduct.

U.S. Bureau of Reclamation. Under an agreement, dated August 5, 1998, the Department conveyed 14,190 acre-feet of CVP water through the California Aqueduct to O'Neill Forebay for USBR in repayment for 14,010 acre-feet of SWP water USBR conveyed for the Department during emergency repairs of the California Aqueduct in March and April 1998. Thirty acre-feet of SWP water were exchanged with USBR in O'Neill Forebay to handle the difference between the amount of CVP water the Department conveyed and the agreement. To handle the difference between the amount of SWP water that USBR conveyed and the agreement, 210 acre-feet of CVP water was exchanged with the Department in O'Neill Forebay.

U.S. Department of Veterans Affairs. Under an annual agreement with USBR, dated January 15, 1998, the Department conveyed 34 acre-feet through SWP facilities to maintain the San Joaquin Valley National Cemetery near Santa Nella, California. The Department conveyed this water to Reach 2B of the California Aqueduct.

U.S. Fish and Wildlife Service. The Department conveyed 14,081 acre-feet of CVP water for the USFWS according to provisions of an amended cooperative agreement initiated by USBR dated September 9, 1994. The water was conveyed to the Kern National Wildlife Refuge through Reach 10A of the California Aqueduct.

Westlands Water District. The Department conveyed 20,000 acre-feet of WWD's CVP water to KCWA during February through April 15, 1998, for a like amount from KCWA to WWD delivered from April 15 through December 31, 1998. A letter agreement between the Department and KCWA dated May 13, 1998, and amended August 26, 1998, approved the exchange.

Floodwater. Occasionally, during wet years, the Department accepts floodwater from the Kern River into the California Aqueduct through the Kern River-California Aqueduct Intertie—a facility located near Highway 119 in Kern County—for delivery to water agencies under agreements or to help satisfy SWP delivery demands downstream of the Intertie. This operation alleviates flooding of farmlands within the Kern River Interests service and surrounding areas. The Department accepts flood flows through the Intertie under an *Agreement among the State of California, Kern County Water Agency, and the Kern River Interests for Diversions of Floodwaters through the Kern River-California Aqueduct Intertie*, dated November 18, 1975. In 1998, the Department accepted 188,048 acre-feet of floodwater into the California Aqueduct for delivery as follows:

Desert Water Agency/Coachella Valley Water District. Under an agreement among CVWD, DWA, MWD, Delta Lands Reclamation District No. 770, TLBWSD, and the Department, dated April 18, 1997, the Department conveyed 20,156 acre-feet of water from Reach 13B of the California Aqueduct to MWD, at Reach 30, for ultimate delivery to DWA and CVWD. The Department conveyed this water during May and June of 1998.

State Water Project. The Department used the balance—167,892 acre-feet—of the floodwater accepted into the California Aqueduct to help satisfy SWP demands downstream of the Intertie.

Westlands Water District-Kings River Water. Under an agreement dated March 30, 1998, between the Department and WWD, the Department conveyed 7,117 acre-feet of Kings River Water to WWD through Reach 7 of the California Aqueduct.

Water Rights 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 water simply passes through SWP transportation facilities; a portion is stored in SWP reservoirs for release at a later time. In 1998, 903,613 acre-feet of water in this category were delivered to the Feather River, South Bay, and Southern California areas.

Feather River Area. Nine nonproject agencies in the Feather River area received 872,738 acre-feet. Those agencies are:

- Last Chance Creek Water District (10,046 acre-feet);
- Thermalito Irrigation District (2,271 acre-feet);
- Oroville-Wyandotte Irrigation District (6,473 acre-feet);
- Western Canal Water District (241,797 acre-feet);
- Joint Water District Board (587,662 acre-feet);
- Tudor Mutual Water Company (2,112 acre-feet);
- Oswald Water District (851 acre-feet);
- Garden Highway Water Company (13,685 acre-feet); and
- Plumas Mutual Water Company (7,841 acre-feet).

South Bay Area. In the South Bay area, 30,358 acre-feet of local water were delivered to ACFCWCD-Zone 7 and ACWD. These two South Bay Aqueduct contractors hold water rights to runoff from the Lake Del Valle watershed.

Southern California. In Southern California, 517 acre-feet of local runoff from the Houston Creek watershed were stored and delivered to CLAWA under local water rights. These local water rights have been signed over to the Department as part of the contractual arrangements for storing and delivering this local runoff for the CLAWA.

Annual Water Entitlements and Water Delivered Since 1962

Information about annual water entitlements and water conveyed for the past 37 years is contained in Table 9-5. The following discussion of entitlements and water conveyed is arranged according to column numbers.

Annual Entitlements. Columns 1 through 7 of Table 9-5 show the amount of the long-term contractor's entitlement water by area for years 1962 through 1998 as specified in the entitlement schedules (Table A, Annual Entitlements) of the long-term water supply contracts.

In some instances these entitlement schedules —projections of each contractor's need for water to 2035— have been amended to meet the needs of individual contractors. 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.

Water Delivered. Columns 8 through 16 show water delivered or conveyed, including initial fill water and operational losses and storage changes.

Entitlement Water. Column 8 shows amounts of entitlement water delivered each year from 1962 through 1998. In 1998, entitlement water delivered to 27 contractors totaled 1,745,807 acre-feet. That amount includes 20,288 acre-feet of 1998 interruptible entitlement water.

Surplus and Unscheduled Water. Surplus and unscheduled water is water in excess of that required to meet all demands for entitlement water and water to be stored in SWP reservoirs.

Column 9 shows amounts of surplus and unscheduled water delivered from 1962 through 1998. During 1993 through 1998, surplus and unscheduled water were not delivered.

Column 10 includes amounts of water classified as other water delivered in 1998, including nonproject water conveyed through SWP facilities and regulated delivery of local supply.

In 1998, a total of 134,682 acre-feet of other water was delivered.

Feather River Diversions. Column 11 includes amounts of water from the Feather River delivered according to agreements for water rights water. In 1998, a total of 872,738 acre-feet in this category was delivered to agencies in the Feather River area.

Recreation Water. Column 12 shows water conveyed for recreational use or to provide water to improve water quality for fish and wildlife. In 1998, a total of 2,108 acre-feet of SWP water was conveyed for this purpose.

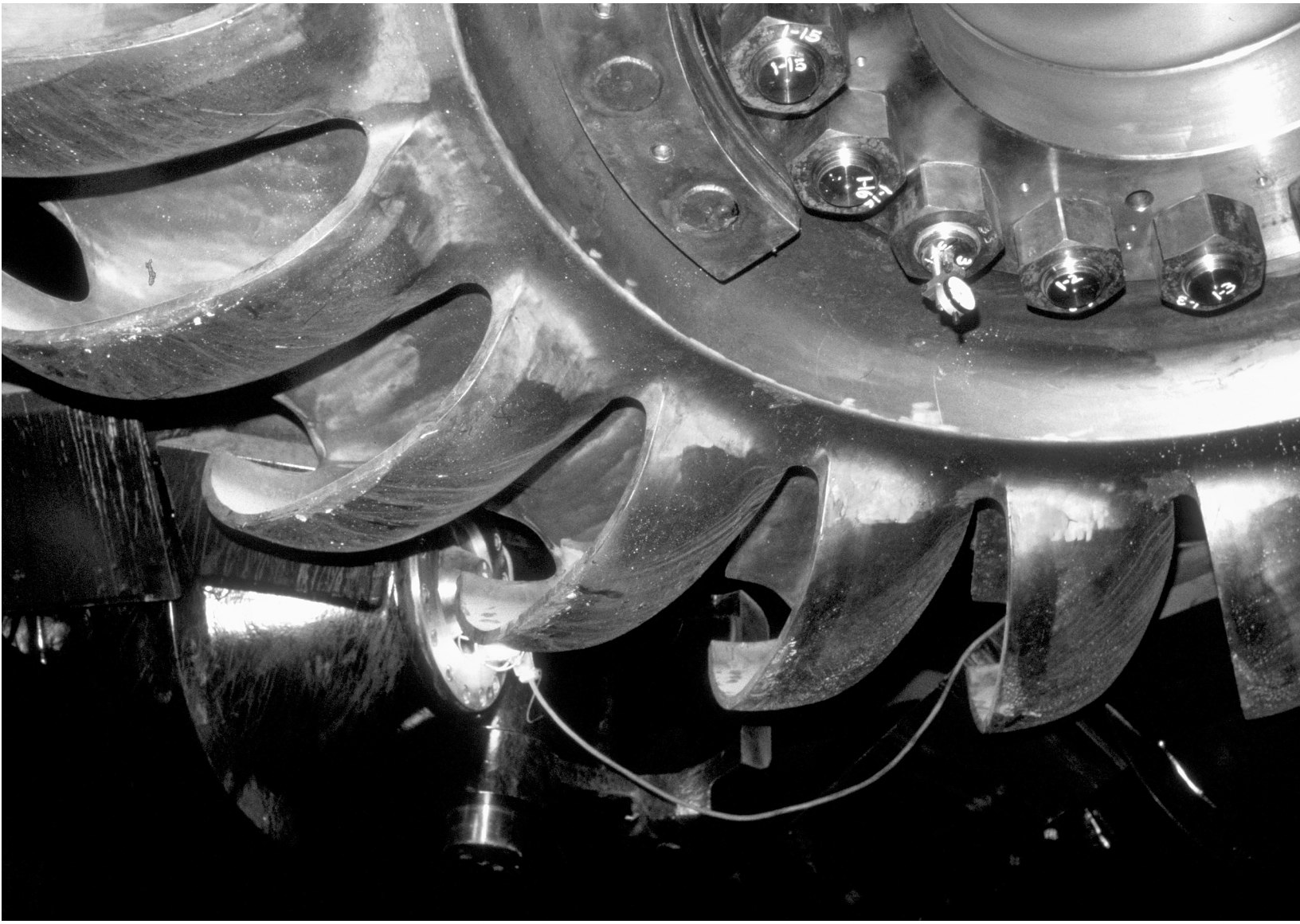
Initial Fill Water. The quantities listed in Column 14 represent the amounts used to initially fill the aqueducts and reservoirs south of the Delta to maximum operating capacities. Initial filling began in 1962 with the filling of the South Bay Aqueduct and was completed in 1979 when Lake Perris reached its maximum operating capacity of 127,000 acre-feet. In 1996 and 1997, the Coastal Aqueduct was initially filled.

Operational Losses. Column 15 includes the total amounts of water lost through evaporation and seepage, net storage changes in reservoirs south of the Delta, and amounts of inflow from local drainage areas, including inflows into San Luis Canal and from the Kern River Intertie.

Negative values are indicated for years when withdrawals and evaporation from reservoirs south of the Delta exceed the amounts of water added to the reservoirs.

Information for this chapter was provided by the State Water Project Analysis Office.

Chapter 10
Power Resources



Construction of the interior of
Devil Canyon Powerplant

Significant Events

- In 1998, State Water Project plants consumed 3.45 billion kWh, generated 5.92 billion kWh of energy, and purchased or exchanged 4.43 billion kWh of energy.

- The Department purchased 2.29 billion kWh of energy in 1998 at a cost of $39.72 million. Associated capacity costs were $24.07 million.

- The Department sold 6.9 billion kWh of energy in 1998 to 36 utilities and 19 power marketers for total revenues of $139.35 million. The Department also received $16.44 million in revenues for capacity, exchanges, transmission arrangements, and ancillary services.

- The Oroville Relicensing Steering Committee was formed in April 1998 to help coordinate the Department's increasing preparatory activities for relicensing the Oroville Facilities.

- In 1998, the Department began evaluating the advantages and disadvantages of selling its share of Reid Gardner Unit 4. Nevada Power Company plans to sell its share of the plant, which it co-owns with the Department, when it merges with Sierra Pacific Power Company.

- To reduce the financial risk of potentially volatile energy prices from the sale of Reid Gardner Unit 4 surplus energy, the Department entered into an agreement with NPC to give NPC the sole use of the unit from June 1, 1998, through September 15, 1998. NPC paid the Department guaranteed contract rates for the energy used during this period.

- The California Independent System Operator and the California Power Exchange began operation on March 31, 1998. The ISO manages most of California's transmission grid and is responsible for system reliability. The CalPX serves as a broker for the sale and purchase of most of California's electricity supply.

- The Department relied on Pacific Gas & Electric and Southern California Edison as its scheduling coordinators to submit its energy schedules to the ISO until the Department became its own scheduling coordinator in July 1998.

- In July 1998, the Department started buying and selling—through the CalPX's day-ahead market—excess energy not purchased or sold through bilateral agreements.

- In August 1998, the Department started selling ancillary services to the ISO.

- Along with a majority of Western Systems Coordinating Council members, the Department voted in December 1998 to institute a Reliability Management System designed to protect the reliability of the western transmission network.

Long-term State Water Project contractors depend on the SWP to provide economical sources of power to deliver affordable water. Responding to that need, the Department developed and administers a comprehensive power resources program. Key elements of the program include the strategic timing of generation and pumping schedules, purchase of power resources and transmission services, short-term sales of power surpluses, and studies of power resources for future needs.

Power Resources Program

The goals of the SWP power resources program are to:

- obtain reliable, environmentally sensitive, and competitively priced power sources and transmission services sufficient to operate the SWP;
- develop and manage power resources to minimize the cost of water deliveries to SWP contractors;
- minimize impacts on the SWP when major contractual power arrangements begin to expire in 2004;
- meet responsibilities and criteria of the Western Systems Coordinating Council; and
- conform with regulations of the California Energy Commission and the Federal Energy Regulatory Commission.

To achieve these goals, the Department constructed its own power facilities and contracted for long-term power resources with many electric utilities. In addition, the Department arranged for transmission service between SWP power resources and pumping loads and interconnected utilities. The power resources program takes advantage of SWP water storage and conveyance capacities, which can allow the Department to operate SWP pumps somewhat independently of water delivery needs. This control of pumping loads and generation allows the Department to enter into advantageous agreements with other electric utilities, which complement the use of SWP generation to meet SWP power requirements.

Reliability Management System

In 1996, electrical disturbances on local transmission networks led to two major outages of the interconnected transmission systems of several states, including California. In both instances, operation of the SWP, as well as that of numerous other major transmission-dependent systems, was adversely impacted.

After investigating these events, the WSCC proposed a program known as the Reliability Management System to address the reasons for the interconnected transmission system outages. RMS would have WSCC members replace voluntary reliability standards that impact transmission reliability with mandatory standards backed by monetary sanctions for noncompliance. WSCC members approved RMS in December 1998. The Department anticipates improving its SWP generator unit testing program and calibrating selected power system stabilizers to avoid sanctions. Additional measures may also financially impact the SWP in the future. Actual implementation of RMS was not scheduled until late 1999.

Oroville Facilities Relicensing

The existing 50-year hydroelectric license for the Oroville facilities will expire January 31, 2007. To obtain a new license, the Department must submit a relicensing application to FERC by January 31, 2005. Due to the intense interest in issues

examined during the relicensing process, many applicants have found the process to be very complex and lengthy. As a result, relicensing applicants for large projects typically begin preparatory work 8 to 10 years in advance of the existing license expiration.

In April 1998, the Department formed the Oroville Relicensing Steering Committee to provide guidance to staff involved in relicensing preparations. This committee is composed of managers and supervisors from Department organizations that will participate in the relicensing process. During 1998, the committee provided recommendations on policy issues, consultant roles, FERC licensing procedures, and formation of a Department relicensing team.

The Steering Committee will decide which relicensing process the Department should use to submit its application. FERC provides applicants with several choices that allow them to best match their unique relicensing situations. The choices range from the "traditional" process with less FERC involvement to the "alternative" processes with more FERC involvement and stakeholder interaction.

Potential Sale of Reid Gardner Unit 4

In early 1998, NPC announced plans to merge with Sierra Pacific Power Company. To enhance prospects for regulatory approval of the merger, NPC announced that both NPC and SPPC would sell all their generating plants if the merger is approved. The Department and NPC are co-owners of Reid Gardner Unit 4, a 275-MW coal powerplant. NPC has asked the Department to also sell its share of Reid Gardner Unit 4. The Department is considering that request. During 1998, the Department evaluated the advantages and disadvantages of selling its share of Reid Gardner Unit 4 as well as the fair market price for the powerplant and the allocation of sale proceeds between the Department and NPC. The Department will continue evaluations of these issues in 1999.

Restructuring of the Electric Utility Industry

On September 23, 1996, Assembly Bill 1890 was signed into law by the Governor. AB 1890 called for restructuring the electric utility industry in California and creating the California Independent System Operator and the separate California Power Exchange. To make the new California markets viable and limit market power control, the investor-owned utilities (PG&E, SCE, and San Diego Gas and Electric Company) were required to unbundle their transmission, generation, and distribution into separate business units and divest half of their thermal generation. The investor-owned utilities were granted full recovery of their stranded costs through a competition transition charge.

On March 31, 1998, the ISO and CalPX began operation. The ISO manages most of California's transmission grid and is responsible for overall system reliability. Scheduling coordinators were created to submit energy schedules to the ISO. All loads and resources within the ISO-controlled grid and resources imported or exported within California must schedule through these coordinators. The ISO operates the following three markets.

- Ancillary services market, which consists of voltage regulation, spinning, nonspinning, replacement reserves, voltage support, and black start. Voltage regulation, spinning, nonspinning, and replacement reserves are acquired through day-ahead and hour-ahead markets. Voltage support and black start are purchased on a yearly contract basis;
- Congestion management market, which uses adjustment bids to clear congestion on a transmission path; and
- Real-time imbalance market, which uses supplemental energy bids to maintain grid integrity by following the varying loads during real-time.

The CalPX schedules the loads and resources to the ISO as the scheduling coordinator for the three investor-owned utilities. The CalPX also operates the day-ahead market and the hour-ahead market for the purchase and sale of energy by other market participants.

The Department continued to participate in various "stakeholder" processes to resolve ongoing issues of concern, both before and after ISO and CalPX startup. Major issues included:

- discussions on the degree of participation of contract holders in ISO;
- conversion of existing transmission contracts to ISO service and receipt of financial rights from ISO as compensation;
- the appropriate valuation of the Department's remedial action system by ISO;
- development of ISO's transmission access charge and off-peak rates;
- unbundling ISO's grid management charge paid by scheduling coordinators to recover ISO's costs;
- reaching conformity between the investor-owned utilities' transmission owner's tariffs and ISO's tariff; and
- ISO's 13 and CalPX's 7 tariff amendments filed with FERC, covering operational issues discovered after ISO and CalPX started operations.

The Department operated under existing contracts and scheduled through PG&E and SCE until July 1998. In July, the Department signed the Scheduling Coordinator, Participating Generator, and Meter Service Agreements with ISO to become a scheduling coordinator and schedule directly with ISO. In August, the Department started selling spinning, nonspinning, and replacement reserves to ISO. The Department also signed the CalPX Participation Agreement in July 1998 and started buying and selling energy not purchased or sold through bilateral agreements in the CalPX's day-ahead market.

Existing SWP Power Facilities

Figure 10-1 shows the names, locations, and generation capability of the Department's primary power facilities.

Hydroelectric. Economic hydroelectric generation provides the largest share of SWP power resources. The combined 900-megawatt Hyatt Pumping-Generating Plant and Thermalito Pumping-Generating Plant (Hyatt-Thermalito) generate about 2.2 billion kWh of energy in a median water year, while the 3 MW from Thermalito Diversion Dam Powerplant add another 24 million kWh of energy a year.

Generation at SWP aqueduct recovery plants—Gianelli, Alamo, Devil Canyon, Warne, and Mojave Siphon—varies with the amount of water conveyed. These five plants generate about one-sixth of the total energy used by the SWP.

Coal. Since July 1983, the Department has received energy from Reid Gardner Powerplant, a coal-fired facility near Las Vegas, Nevada. Reid Gardner consists of four units. The Department owns 67.8 percent of Unit 4 (169.5 MW based on nameplate capacity of 250 MW), while NPC owns the remainder of Unit 4 as well as all of units 1, 2, and 3.

Since September 1998, the Department has received up to 245 MW (entitlement share) from Unit 4 (based on an upgraded generating capacity of 275 MW), subject to NPC's limited right to interrupt the Department's energy deliveries during specified periods. Whenever NPC interrupted the Department's scheduled energy, the Department received payment based on NPC's combustion turbine cost.

To reduce the financial risk of potentially volatile energy prices from the sale of Reid Gardner Unit 4 surplus energy, the Department entered into an agreement with NPC similar to the agreements for the summers of 1995 and 1996. Under this agreement, from June 1, 1998, through September 15, 1998, NPC had the sole use of Unit 4 to meet high energy demands during the hot summer months. NPC paid the Department guaranteed contract rates for the energy used during this period.

Future SWP Power Facilities

To meet future SWP power requirements, the Department also considers and evaluates new power resources, including reviewing SWP power requirements and analyzing the type of resource and its cost. Factors considered include:

- ability to meet anticipated power requirements for pumping;
- transmission access availability;
- anticipated water deliveries to contractors;
- cost of the resource;
- availability and cost of financing;

Figure 10-1
Names, Locations, and Generation Capability of Primary Power Facilities
(Capability May Differ from Nameplate Capacity)

- environmental impacts and costs of mitigation; and
- operating characteristics.

The Department continues to consider several potential power resources. These include a second unit at Alamo Powerplant, a third unit at Warne Powerplant, and additional capacity at Hyatt-Thermalito.

Contractual Resource Arrangements

Through joint development, exchanges, and purchases, the Department obtains a significant amount of capacity and energy for SWP operations from other utilities throughout California, the Northwest, and the Southwest. Under these agreements, the Department can sell, buy, or exchange energy.

Some agreements allow 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.

Negotiations continue with various utilities in the Pacific Northwest to develop arrangements for purchases, sales, and exchanges to take advantage of the Department's 300 MW transmission capacity on the Extra-High Voltage Pacific Northwest Intertie.

Joint Developments. In 1966, the Department entered into a contract with the Los Angeles Department of Water and Power for the joint development of the West Branch of the California Aqueduct. The LADWP constructed and operates Castaic Powerplant, which is electrically connected to the LADWP transmission system at the Sylmar Substation.

The Department receives capacity and energy at the Sylmar Substation based on weekly water schedules through the West Branch.

Gianelli Pumping-Generating Plant is a joint SWP (222 MW) and U.S. Bureau of Reclamation (202 MW) facility.

Power Exchanges. The largest portion of the energy used by the SWP is provided by the 1979 Power Contract and the 1981 Capacity Exchange Agreement with SCE. Service began in April 1983 under the Power Contract and in April 1987 under CEA.

According to terms of the Power Contract, the Department provides SCE with up to:

- 350 MW of capacity and approximately 40 percent of the energy from Hyatt-Thermalito;
- 120 MW of capacity and all the energy generated by Devil Canyon Powerplant Units 1 and 2; and
- 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 amount of energy provided to SCE 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. The formula determines the value of capacity in dollars and converts the dollar amounts into an equivalent amount of off-peak energy.

According to terms of the CEA, each year the Department must provide 412.5 million kWh of energy to SCE during on-peak periods at a maximum delivery rate of 225 MW. SCE returns approximately 110 percent of the energy the Department provides during mid-peak and off-peak periods. In addition, SCE waives 75 percent of its charges to the Department for specified firm transmission service provided to SWP pumping and generating facilities. SCE also makes an annual payment of $900,000 to the Department.

In addition, according to terms of the 1979 Power Contract, SCE receives energy from four of the Metropolitan Water District of Southern California powerplants—Lake Mathews, Foothill Feeder, San Dimas, and Yorba Linda. In return, the Department receives off-peak energy from SCE averaging 107 percent of the total energy provided to SCE

from those plants. All the energy from the fifth plant, Greg Avenue, is provided to LADWP according to a 1983 agreement between LADWP and the Department. The utility returns 98.8 percent of this energy to the Department during off-peak periods.

Purchases. The Department obtains a significant amount of energy through long-term and short-term purchase agreements with utilities in California, the Northwest, and the Southwest.

Long-Term Purchases. The Department purchases hydroelectric energy generated by other utilities. The output of the 165 MW Pine Flat Powerplant, owned and operated by Kings River Conservation District, supplies the SWP about 400 million kWh of energy in median water years.

The Department contracts for the energy output of five hydroelectric plants owned and operated by MWD. The total capacity of those plants is 30 MW. To use this resource efficiently, the Department included it in the exchange arrangements with SCE.

Beginning in late 1983, the Department purchased wind-generated energy from TERA Power Corporation. The energy was delivered from the Bethany Wind Park to the South Bay Pumping Plant near Tracy. Originally TERA installed 168 wind machines, with a total capacity of 9.45 MW. However, because of mechanical failures and subsequent litigation involving the developer, investors, and manufacturers, many machines have been out of service since 1987. In early 1996, the Department terminated the contract due to a contract breach by TERA Power Corporation. The Department proposes to dismantle and remove the wind park facilities.

The Department signed an agreement with PacifiCorp of Portland, Oregon, to purchase 100 MW of firm capacity and associated energy. That agreement became effective June 1, 1991, and will continue through 2004.

Short-Term Purchases. Additionally, according to terms of the 1988 Coordination Agreement between the Department and MWD, the Department may purchase surplus energy from MWD's Colorado River Aqueduct system. The Coordination Agreement provides for coordinated operation between the SWP and MWD's Colorado River Aqueduct system. It also provides for:

- monthly surplus firm energy sales to MWD;
- economy energy sales to MWD;
- surplus energy purchases from the Colorado River Aqueduct system; and
- energy exchanges between the Department and MWD.

The Department also has the Western System Power Pool agreement with member utilities to purchase interruptible economy energy to satisfy unexpected, short-term energy shortages and to sell surplus short-term energy.

Contractual Transmission Arrangements

Although able to acquire transmission independently, the Department depends on other sources for transmission services. PG&E and SCE are the Department's primary providers of transmission service between SWP power resources and pumping loads and interconnected utilities for purchases, sales, and exchanges of power.

Under the Comprehensive Agreement with PG&E, the Department receives 1,355 MW of firm transmission service over the PG&E transmission system between SWP pump loads and power resources in Northern and Central California. The agreement allows the Department to request and receive additional firm and interruptible transmission service if needed.

To interconnect the SWP loads and resources in Southern California, the Department receives transmission service from SCE over the SCE transmission system under the SCE-DWR Power Contract and Firm Transmission Service Agreement.

In August 1967, the Department contracted for 300 MW of transmission capacity on the Extra High Voltage Pacific Northwest Intertie from the California-Oregon border to the Table Mountain, Tesla, Los Banos, and Midway substations. The Department retains its entire 300 MW share of

EHV capacity for access to the Pacific Northwest until 2005; 100 MW of this capacity is committed to receiving the long-term purchase of 100 MW from PacifiCorp.

In December 1984, the Department signed a Memorandum of Understanding with many public and private California utilities. As implemented in the Interim Participation Agreement and the Long-Term Participation Agreement, the Department has an option (which can be exercised during a 5-year period beginning in January 2005) to purchase 97 MW of transmission capacity on the third 500 kV transmission line that connects California with the Pacific Northwest. The transmission line began operation March 17, 1993.

Other SWP transmission needs are met by contractual arrangements with California utilities.

Load Management

The SWP controls the timing of its pumping load through an extensive computerized network. 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 by selling power to other utilities during on-peak periods when power values are high. By taking advantage of this flexibility in scheduling SWP pumping load and generation, the Department reduces the net cost of power needed for SWP water deliveries.

Sales of Excess Power. When generation from SWP power resources exceeds requirements, the Department sells the excess power on the market. Currently, the Department contracts with utilities and marketers for short-term purchase, sale, or exchange of power. In addition to selling firm power, the Department may sell power on a day-to-day or hour-to-hour basis according to the terms of its interchange agreements and of the Western System Power Pool Agreement. These agreements provide the basis for making economical energy transactions, short-term capacity and energy sales or exchanges, unit commitments, and transmission service purchases. Through these contracts, the Department sells excess capacity and energy at market rates. Starting in July 1998, the Department also bought and sold through the CalPX market excess energy not sold through bilateral agreements.

SWP Power Operation in 1998

Tables 10-1 through 10-4 present statistical information about SWP power operation for calendar year 1998, including energy consumed and generated, energy exchanged and purchased, and energy sold.

Energy Consumed

In 1998, energy used at the 25 SWP pumping and generating plants totaled 3.45 billion kWh.

Table 10-1 shows the amount of energy used each month at SWP pumping and generating plants to operate the SWP in 1998.

According to terms and conditions of various water conveyance contracts and exchange agreements, some water belonging to the Central Valley Project is pumped through the SWP Banks Pumping Plant and through the CVP and SWP joint-use facilities at Dos Amigos Pumping Plant and Gianelli Pumping-Generating Plant. USBR furnishes the energy for pumping this water.

Energy Generated

Table 10-2 shows amounts of energy generated at SWP facilities in 1998, as well as energy purchased for SWP operations.

Hydroelectric and Coal. The Hyatt-Thermalito power complex in Oroville produces a large amount of SWP energy. In 1998, Hyatt-Thermalito generated 3.87 billion kWh of energy.

Energy generated at SWP recovery plants—Alamo, Devil Canyon, Gianelli, Mojave Siphon, and Warne—totaled 664 million kWh in 1998.

In 1998, the SWP share of energy generated at the coal-fired Reid Gardner Unit 4 totaled 1.38 billion kWh of energy.

Table 10-1
Energy Used at Pumping Plants and Powerplants in 1998, by Month
(Millions of Kilowatt-Hours)

	Month												
Pumping Plants and Powerplants	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Total*
Hyatt-Thermalito Pumping-Generating Plant (pumpback and station service)	16.02	1.52	0.39	0.02	0.00	0.02	0.01	0.00	0.04	0.06	0.00	0.00	18.10
North Bay Interim Pumping Plant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Cordelia Pumping Plant	0.57	0.66	0.58	0.65	0.61	0.61	0.78	0.89	0.82	0.61	0.54	0.92	8.24
Barker Slough Pumping Plant	0.25	0.44	0.38	0.39	0.40	0.60	1.08	1.18	0.84	0.37	0.30	0.50	6.73
South Bay Pumping Plant	3.06	0.45	0.64	1.10	5.82	10.55	12.36	11.25	8.28	4.59	3.82	5.72	67.63
Bottle Rock Powerplant (station service)	0.03	0.03	0.04	0.04	0.05	0.04	0.03	0.03	0.03	0.04	0.05	0.06	0.47
Del Valle Pumping Plant	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.10
Banks Pumping Plant	56.12	2.60	8.38	1.40	12.48	36.18	60.12	74.08	75.19	79.32	36.82	32.02	474.72
Gianelli Pumping-Generating Plant (SWP share)	46.40	0.11	0.39	0.69	1.71	0.86	4.05	0.28	19.93	44.90	24.32	8.57	152.22
Dos Amigos Pumping Plant (SWP share)	15.79	2.84	5.39	4.07	6.27	14.79	34.32	50.01	26.78	19.53	10.38	11.93	202.10
Buena Vista Pumping Plant	9.91	2.73	4.86	15.05	15.63	20.19	26.82	31.01	20.22	15.90	6.86	4.26	173.44
Teerink Pumping Plant	10.32	2.43	4.40	16.04	15.91	18.42	23.46	27.99	19.79	16.35	7.01	3.93	166.06
Chrisman Pumping Plant	23.48	5.60	9.47	36.05	34.63	39.24	49.64	61.98	44.64	36.96	16.03	8.50	366.22
Edmonston Pumping Plant	84.27	19.33	31.82	130.39	120.27	134.48	169.09	214.62	155.71	128.06	56.82	30.62	1275.49
Alamo Powerplant (station service)	0.04	0.08	0.05	0.00	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.06	0.37
Pearblossom Pumping Plant	9.98	0.72	7.99	36.14	30.83	30.32	27.62	36.35	26.97	20.76	9.07	6.59	243.31
Mojave Powerplant (station service)	0.06	0.08	0.07	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.06	0.07	0.47
Devil Canyon Powerplant (station service)	0.25	0.23	0.17	0.10	0.15	0.16	0.15	0.15	0.15	0.15	0.24	0.31	2.20
Oso Pumping Plant	5.37	2.39	0.32	0.26	0.25	1.37	5.75	7.44	5.43	5.27	2.33	0.34	36.52
Warne Powerplant (station service)	0.09	0.09	0.13	0.13	0.12	0.09	0.10	0.34	0.30	0.37	0.42	0.13	2.33
Las Perillas Pumping Plant	0.21	0.14	0.44	0.58	0.66	1.22	1.68	1.59	0.94	0.60	0.25	0.31	8.61
Badger Hill Pumping Plant	0.48	0.31	1.09	1.53	1.79	3.28	4.70	4.41	2.52	1.59	0.64	0.79	23.14
Devil's Den Pumping Plant	0.89	0.80	0.99	1.00	0.92	1.61	2.02	2.09	1.78	1.72	1.12	0.83	15.78
Bluestone Pumping Plant	0.83	0.75	0.92	0.98	0.94	1.65	2.08	2.16	1.85	1.78	1.17	0.87	15.99
Polonio Pass Pumping Plant	0.91	0.81	1.00	1.02	0.93	1.62	2.05	2.12	1.82	1.75	1.15	0.86	16.04
Subtotal	285.34	45.15	79.91	247.67	250.40	317.32	428.00	530.00	414.07	380.75	179.43	118.23	3276.29
High Voltage Transmission Line Losses and System Imbalances	12.87	12.80	16.57	19.81	20.74	24.52	2.22	3.57	16.52	14.20	7.86	17.34	169.01
Total Energy Required for SWP	298.20	57.96	96.48	267.48	271.14	341.84	430.22	533.57	430.58	394.95	187.29	135.57	3,445.29

Table 10-2
Energy Generated and Purchased in 1998, by Month
(Millions of Kilowatt-Hours)

Sources of Energy	Month												
	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Total*
SWP Energy Sources													
Hyatt-Thermalito Powerplant	250.09	470.16	420.67	324.01	383.02	423.40	343.63	325.40	263.78	155.81	97.97	411.11	3,869.05
Gianelli Pumping-Generating Plant (SWP share)	12.93	0.00	0.00	0.53	0.00	0.19	17.25	32.70	6.48	0.11	0.00	4.87	75.06
Alamo Powerplant	1.92	0.00	1.59	6.84	6.26	6.55	5.91	7.59	5.76	4.35	1.80	1.30	49.87
Mojave Siphon Powerplant	0.90	0.00	0.91	4.36	3.55	3.06	3.21	4.43	3.03	2.21	0.64	0.52	26.81
Devil Canyon Powerplant	16.23	10.53	21.93	61.95	52.70	52.15	55.96	60.38	45.39	35.85	13.31	8.84	435.22
Reid Gardner Unit 4	117.39	87.53	113.81	12.31	62.74	98.81	113.97	151.13	131.53	179.32	174.14	139.35	1,382.04
Warne Powerplant	12.03	4.70	0.00	0.00	0.00	2.29	12.93	16.55	11.76	12.07	4.79	0.00	77.12
Subtotal	411.49	572.92	558.91	410.00	508.26	586.46	552.85	598.18	467.73	389.72	292.66	566.00	5,915.17
Energy Sources from Long-Term Agreements													
Castaic Powerplant (SWP share)	18.48	27.38	11.50	14.44	20.64	13.22	18.84	17.71	13.15	14.78	6.31	0.00	176.46
Metropolitan Water District of Southern California	11.79	4.47	7.00	8.63	9.28	11.69	12.49	14.88	13.52	7.44	7.62	7.69	116.49
Pine Flat Powerplant KRCD	(0.14)	2.63	48.96	92.67	130.85	129.62	130.88	118.80	53.61	23.64	12.17	23.68	767.38
PacifiCorp (PP&L)	55.20	44.03	46.80	64.70	41.88	46.81	54.78	52.00	51.07	54.00	48.00	53.05	612.32
Energy from MWD for CRA	0.00	0.00	11.97	77.93	54.59	0.00	0.00	0.00	0.00	0.00	0.00	3.92	148.41
Energy to MWD for CRA Pumping	0.00	0.00	0.00	0.00	0.00	(23.43)	(36.96)	(38.64)	(21.78)	(1.98)	(14.19)	(7.52)	(144.49)
Power Exchange delivered to AZUS, NEVE, PGET, SETC, WESC, SMUD, WAMP, EPMI, IPC, NCPA, PGES	(29.16)	(16.80)	(18.61)	(34.05)	(78.82)	(3.43)	(41.53)	(36.51)	(34.26)	(61.04)	(73.27)	(70.51)	(497.98)
Power Exchange received from AZUS, CPMT, LDWP, NEVE, PGET, SETC, WESC	18.60	16.80	18.61	34.11	78.74	3.43	41.53	36.51	34.26	43.20	46.15	48.15	420.09
Power Exchange delivered to SCE	(158.42)	(238.11)	(234.57)	(227.47)	(235.03)	(274.49)	(255.28)	(251.40)	(202.78)	(141.33)	(92.24)	(203.86)	(2,514.97)
Power Exchange received from SCE	305.41	229.77	284.56	296.70	209.19	317.79	443.96	560.14	493.71	490.60	331.06	580.87	4,543.77
Power System Deviations Account Transactions	(2.69)	(2.55)	(2.64)	(0.26)	0.96	1.09	0.00	0.00	0.00	0.00	0.00	0.00	(6.09)
Subtotal	219.07	67.62	173.59	327.40	232.28	222.30	368.71	473.49	400.50	429.32	271.61	435.47	3,621.38
Purchases													
Arizona Public Service Company	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
Avista Energy, Inc.	0.00	0.00	0.00	0.00	0.00	0.00	10.18	10.40	10.00	0.00	0.00	0.00	30.58
Bonneville Power Administration	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.17
Columbia Energy Power Marketing	0.00	0.00	0.00	0.00	0.00	31.20	0.00	0.00	0.00	0.00	0.00	0.00	31.20
Duke/Louis Dreyfuss, LLC	0.00	0.00	0.00	0.00	0.00	20.80	20.55	20.80	0.00	0.00	0.00	0.00	62.15
Enron Power Marketing, Inc.	0.00	0.00	0.00	0.00	0.00	0.00	30.62	31.20	30.00	0.00	0.00	0.00	91.82
Pacific Gas & Electric Company Energy Trading	0.00	0.00	0.00	0.00	0.00	0.00	20.75	20.80	20.00	0.00	0.00	0.00	61.55
Pacific Gas & Electric Company	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
Powerex	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.11	2.11
California PX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.00	251.18	216.07	20.30	528.55
Subtotal	0.20	0.17	0.00	0.00	0.00	52.17	82.10	83.20	101.00	251.18	216.07	22.41	808.50
Total Resources	630.76	640.72	732.50	737.40	740.54	860.93	1,003.67	1,154.86	969.23	1,070.22	780.34	1,023.88	10,345.05
Less Energy Sales	332.56	582.77	636.02	469.93	469.40	519.09	573.44	621.29	538.65	675.27	593.05	888.30	6,899.76
Total Energy Provided to the SWP	298.20	57.96	96.48	267.48	271.14	341.84	430.22	533.57	430.58	394.95	187.29	135.57	3,445.29

Table 10-3
Power, Transmission, and Other Services Purchased in 1998 and Costs of Purchase, by Area

Name of Supplier	*Type of Service Purchased*	*Energy (kWH)*	*Energy Cost (Dollars)*	*Capacity Cost (Dollars)*	*Total Cost (Dollars)*
Power and Transmission Purchases					
Northwest Area					
Bonneville Power Administration	Firm and nonfirm energy	170,000	1,360.00		1,360.00
PacifiCorp	Firm and nonfirm energy	612,322,000	10,218,810.41		10,218,810.41
	Capacity and transmission			24,060,562.80	24,060,562.80
BC Hydro, Powerex	Firm and nonfirm energy	2,112,000	2,112.00		2,112.00
Northern California Area					
Kings River Conservation District	Hydroelectric energy	767,857,968	5,916,706.53		5,916,706.53
Pacific Gas and Electric Company	Firm and nonfirm energy	200,000	3,000.00		3,000.00
Sacramento Municipal Utility District	Capacity			11,232.00	11,232.00
Southern California Area					
City of Azusa	Firm energy exchange and transmission		36,096.67		36,096.67
Metropolitan Water District of Southern California	Hydroelectric energy	105,617,949	4,417,998.81		4,417,998.81
Southern California Edison Company	Firm and nonfirm energy and capacity			780.00	780.00
Southwest Area					
Arizona Public Service Company	Firm and nonfirm energy	173,000	2,941.00		2,941.00
Energy Marketers					
Avista Energy, Inc.	Firm energy	30,577,000	798,059.70		798,059.70
California Power Exchange	Firm energy	528,545,000	12,276,848.08		12,276,848.08
Cinergy Capital & Trading, Inc.	Firm energy	31,200,000	600,600.00		600,600.00
Duke Energy Trading Marketing	Firm energy	62,152,000	1,367,344.00		1,367,344.00
Enron Power Marketing, Inc.	Firm energy	91,823,000	2,479,221.00		2,479,221.00
Pacific Gas and Electric Energy Trading	Firm and nonfirm energy	61,545,000	1,600,170.00		1,600,170.00
Subtotal		*2,294,294,917*	*39,721,268.20*	*24,072,574.80*	*63,793,843.00*
Transmission and Other Purchases					
California Independent System Operator	Ancillary and grid management charge				14,399,026.93
Kings River Conservation District	Pine Flat operation and maintenance				3,674,172.00
	Pine Flat debt service				5,345,253.97
Los Angeles Department of Water and Power	Gregg Avenue powerplant scheduling				1,150.00
	Castaic line-transmission service				39,532.30
Nevada Power Company	Reid Gardner Unit 4 firm transmission				1,453,847.00
	Operations and maintenance				17,490,019.34
	Coal and diesel fuel				18,882,839.72
	Insurance				311,692.00
	Taxes				1,504,454.31
	Upgrade energy				102,717.45
Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company	EHV transmission				1,500,000.00
Pacific Gas and Electric Company	Midway-Wheeler Ridge				132,864.00
	Bottle Rock transmission				54,052.46
	Comprehensive–backbone				8,714,385.30
	Table Mountain–Tesla line credit				(3,034,558.20)
	Pine Flat firm and additions				614,665.88
	EHV exceedance				90,897.96
	Castle Rock–Lakeville Line				97,468.02
	TERA operation and maintenance				3,591.45
	Grid management charge				115,830.28
Southern California Edison Company	Firm + scheduling + CEA credit				2,830,844.67
	Additional facilities				1,259,927.04
	Interruptible transmission				209,514.11
	Grid management charge				191,952.69
	Scheduling coordinator				182,621.00
FERC charges for Oroville, Pine Flat, and southern facilities					535,054.29
Subtotal					*77,081,344.79*
Total		**2,294,294,917**	**39,721,268.20**	**24,072,574.80**	**140,683,235.10**

Table 10-4
Energy Sold in 1998 and Revenue from Sales, by Area

Name of Supplier	Energy Sold (kWH)	Revenue from Energy Sales (Dollars)	Revenue from Capacity, Sales, Exchanges, and Transmission Arrangements (Dollars)	Total Power Sales (Dollars)
Power and Transmission Purchases				
Pacific Northwest Area				
BC Powerex	52,112,000	345,417.00		345,417.00
Bonneville Power Administration	1,900,000	32,100.00		32,100.00
Idaho Power Company	120,000	2,250.00		2,250.00
PacifiCorp	648,778,000	11,708,566.00		11,708,566.00
Portland General Electric Company	62,730,000	1,057,315.00		1,057,315.00
Puget Sound Power and Light Company	52,271,000	913,004.50		913,004.50
Seattle City Light	10,171,000	166,790.75		166,790.75
SnohomishPUD (for Exchange Energy)	234,000	3,510.00		3,510.00
Washington Water Power	7,920,000	78,840.00		78,840.00
Northern California Area				
Association Bay Area Government	221,000	7,890.00		7,890.00
California Independent System Operator	177,560,000		14,397,027.55	14,397,027.55
City and County of San Francisco	183,661,000	4,605,274.50		4,605,274.50
City of Redding	63,274,000	1,165,203.25		1,165,203.25
City of Santa Clara	10,910,000	233,408.50	18,312.17	251,720.67
Lassen Municipal Utility District	2,323,000	58,651.00		58,651.00
Modesto Irrigation District	102,531,000	1,487,056.50		1,487,056.50
Northern California Power Agency	325,936,000	5,778,314.56	92,897.16	5,871,211.72
Pacific Gas and Electric Company	88,248,000	1,150,079.25	7,878.57	1,157,957.82
Sacramento Municipal Utility District	582,472,000	11,813,198.76		11,813,198.76
Western Area Power Administration, Mid-Pacific	19,240,000	348,840.00		348,840.00
Southern California Area				
City of Anaheim	37,680,000	640,367.00		640,367.00
City of Azusa	141,438,000	2,881,171.55		2,881,171.55
City of Banning	22,119,000	331,420.00		331,420.00
City of Burbank	77,082,000	1,209,392.27		1,209,392.27
City of Colton	14,896,000	246,691.50		246,691.50
City of Glendale	292,129,000	5,588,610.35		5,588,610.35
City of Pasadena	24,334,000	567,883.50		567,883.50
City of Riverside	117,188,000	3,424,112.06		3,424,112.06
City of Vernon	191,534,000	4,099,354.15		4,099,354.15
Los Angeles Department of Water and Power	180,944,000	2,294,919.50	594,000.00	2,888,919.50
Metropolitan Water District of Southern California	8,655,000	92,625.00		92,625.00
San Diego Gas and Electric Company	80,815,000	923,854.50		923,854.50
Southern California Edison Company	148,618,000	2,124,937.50		2,124,937.50
Southwest Area				
Arizona Power Company	140,419,000	2,430,890.25		2,430,890.25
Nevada Power Company	599,976,000	15,152,740.65	1,208,682.52	16,361,423.17
Salt River Project	197,279,000	2,300,521.50		2,300,521.50
Energy Marketers				
Avista Energy, Inc.	2,400,000	26,400.00		26,400.00
California Power Exchange	398,791,000	9,331,365.16		9,331,365.16
Citizens Lehman Power Sales	20,800,000	478,800.00		478,800.00
Destec Power Service, Inc.	112,000	3,024.00		3,024.00
Duke Energy Trading Marketing	414,412,000	9,403,012.95		9,403,012.95
Electric Clearing House, Inc.	7,716,000	88,614.00		88,614.00
Enron Power Marketing, Inc.	448,680,000	12,670,902.58		12,670,902.58
Illinova Power Marketing, Inc.	5,282,000	68,678.25		68,678.25
KOCH Energy Trading	225,000	6,075.00		6,075.00
LG&E Power	289,000	8,092.00		8,092.00
New Energy Ventures	790,867,000	19,276,628.14		19,276,628.14
New West Energy	36,000,000	437,079.77		437,079.77
NorAM Energy Service	610,000	12,200.00		12,200.00
Pacific Gas and Electric Energy Service	1,600,000	79,975.00		79,975.00
Pacific Gas and Electric Energy Trading	25,600,000	754,137.68		754,137.68
QST Energy Trading, Inc.	800,000	10,800.00		10,800.00
Sempra Energy Trading Corporation	76,575,000	1,411,685.00		1,411,685.00
Southern Energy Marketing, Inc.	600,000	11,000.00		11,000.00
Williams Energy Service Corporation	680,000	9,760.00	124,800.00	134,560.00
Total	6,899,757,000	139,353,430.38	16,443,597.97	155,797,028.35

Contractual Resource Arrangements

SWP power operations rely on contractual arrangements as well as SWP facilities. Those contractual arrangements include joint development projects, energy exchanges, purchases, and transmission.

Joint Development. Through the West Branch Cooperative Development Agreement with LADWP, the Department receives energy based on the amount of water scheduled through the West Branch. In 1998, LADWP provided 176 million kWh of energy for the Department's share of energy generated at Castaic Powerplant.

In 1998, the Department's share of Gianelli Pumping-Generating Plant used 152 million kWh and generated 75 million kWh of energy.

Energy Exchanges. The Department has two agreements with SCE to purchase and/or exchange power. According to terms of the 1979 Power Contract (in effect since April 1983), part of the output of the Hyatt-Thermalito complex and all output of Alamo and Devil Canyon powerplants are delivered to SCE. According to the terms of the Capacity Exchange Agreement (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 2.03 billion kWh of energy to the SWP in 1998.

Purchases and Costs. In 1998, the Department purchased 2.29 billion kWh of energy at a cost of $39.72 million. Associated costs for capacity totaled $24.07 million. Other SWP power costs, includes operation, maintenance, and those for debt service at Pine Flat Powerplant and costs at Reid Gardner Unit 4, totaled $48.76 million. Table 10-3 shows amounts of power, transmission, and other services purchased in 1998 and costs of purchases, by area. Table 10-3 also reflects the restructuring of the electric industry through transactions with CalPX and the ISO and through new charges such as grid management and scheduling coordinators.

Long-Term Purchases. According to terms of the Kings River Conservation District contract, the Department receives the total output of the 165 MW Pine Flat Powerplant. In 1998, the powerplant provided more than 767 million kWh of energy to the SWP at a total cost of $14.94 million.

The Department also has a contract with PacifiCorp, from which the Department purchased 612 million kWh of energy in 1998 at a cost of $34.28 million.

Under the MWD Small Hydro Contract, the Department received 116 million kWh of energy in 1998 from five small hydroelectric powerplants on the MWD system at a cost of $4.42 million.

Short-Term Purchases. Existing resources and long-term power and transmission contracts ensure that the SWP has enough power to meet long-term needs. Periodically, when SWP power requirements exceed resources during daily operations, short-term purchases meet the difference. In 1998, the SWP purchased short-term energy from 10 utilities and marketers. The short-term energy purchases totaled 809 million kWh (Table 10-2).

Sales of Excess Power

In 1998, the Department sold 6.78 billion kWh of energy to 36 utilities and 19 power marketers for total revenues of $139.35 million. The Department also received $16.44 million in revenues for capacity, exchanges, and transmission arrangements. See Table 10-4 for information about energy and other services sold and revenue received, including those sold to CalPX and the ISO.

Forecasting Power Operations

Each year, after reviewing the water contractors' water delivery requests and the construction schedule for future facilities, the Department forecasts SWP power requirements through 2035, paying particular attention to forecasts through 2004, the year major power contracts expire.

Actual SWP power requirements may vary significantly from the amounts forecast. Those variations are 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 was 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 forecasted if actual water deliveries are greater than the amounts estimated. For example, if additional pumping is needed to refill reservoirs south of the Delta after an unexpected dry year, more power will be used than was initially forecast.

Criteria

The Department bases its forecast of electric power primarily on SWP pumping power requirements to deliver water for SWP contractors' short-term and long-term water delivery requests. Requirements are based on the amount of energy necessary to deliver entitlement water requested by water contractors, including losses in reservoirs and aqueducts; recreation water; and water to replace storage in reservoirs south of the Delta.

Short-term power requirements, based on the actual water supply and reservoir storage levels, are determined 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.

Information for this chapter was provided by the State Water Project Analysis Office.

Chapter 11
Facilities Maintenance

Construction at Oroville Dam

Significant Events

- On January 28, 1998, a Division of Safety of Dams climbing team inspected and evaluated the radial gate at Pyramid Dam. Inspections and evaluations are being conducted as a result of the July 17, 1995, failure of Gate 3 at Folsom Dam.
- In October 1998, a Division of Safety of Dams climbing team inspected and evaluated 4 of 17 radial gates at Thermalito Diversion Dam.

The Department of Water Resources, through the Division of Operations and Maintenance, monitors all State Water Project facilities to ensure safety and reliability. O&M staff collects and evaluates data about the performance of each facility. Staff also conducts annual, biannual, and quinquennial inspections and makes reports on facilities to document any deficiencies. These inspections allow facilities to be maintained at the highest level possible with available staff and resources. Finally, the Department is required, under federal and State law, to contract periodically with independent consultants to review the safety of SWP dams and power facilities.

The Department conducts several types of inspections of SWP facilities. O&M staff collects and evaluates data about the performance of each facility. Engineers from the Division of Safety of Dams review instrumentation data and inspect jurisdictional SWP dams annually to ensure that each dam is satisfactory for continued safe operation. The engineers evaluate proposed modifications to existing dams as well as the design and construction of new jurisdictional dams.

The Department is required to contract periodically with independent consultants to review the safety of SWP dams and power facilities, except those in the San Luis Field Division and the Pearblossom Spill Basin. The four dams in the San Luis Field Division (San Luis, O'Neill Forebay, Los Banos Detention, and Little Panoche) are joint use with the U.S. Bureau of Reclamation. They are not currently under the jurisdiction of the Division of Safety of Dams. Pearblossom Spill Basin Dam was originally designed to be used during misoperation at the Pearblossom Pumping Plant. The spill basin was never fully completed and has never been used.

The Federal Energy Regulatory Commission inspects all licensed SWP facilities annually. These inspections include a review of significant events, instrumentation data, and the visual appearance of each dam, penstock, powerplant, etc.

Inspecting and Maintaining Project Dams

During 1998, Department personnel inspected and performed routine and scheduled maintenance on SWP dams. DSOD inspects SWP dams annually with O&M personnel to ensure that each dam is satisfactory for continued safe operation. Engineers from DSOD evaluate proposed modifications to existing dams. FERC engineers inspect FERC-licensed SWP facilities annually. Some inspections were conducted under FERC and California Water Code requirements to evaluate SWP dam facilities every 5 years. Other activities were performed by O&M as routine inspections.

Routine Inspections

Routine inspections were conducted by O&M and DSOD staff at Frenchman, Antelope, and Grizzly Valley dams in the Upper Feather River Area; at Oroville, Bidwell Bar, Lime Saddle, Thermalito Diversion, Thermalito Forebay, Thermalito Afterbay, and Feather River Hatchery dams in the Oroville Area; at Clifton Court, Bethany, Patterson, and Del Valle dams in the Delta Field Division; at Sisk, O'Neill, Los Banos Detention, and Little Panoche detention dams in the San Luis Field Division (O&M and USBR); and at Cedar Springs and Pyramid dams, Devil Canyon Powerplant Second Afterbay, Warne Powerplant (O&M and FERC), and Castaic and Perris dams in the Southern Field Division.

Independent Reviews

California Water Code Reviews. To comply with the California Water Code and the California Code of Regulations, the Department is required to retain a consulting board to review:

- the adequacy of the design of any dam or reservoir the Department proposes to construct; and
- the safety of the completed construction, including the terms and conditions for the Certificate of Approval.

These provisions require the Department to retain a board of three consultants at least once every 5 years to review the operational performance of Department-owned dams. The board of consultants independently reviews and assesses safety conditions of SWP dams. These inspections include a review of significant events, instrumentation data, and the visual appearance of each dam, penstock, powerplant, etc. Consultants are selected based on their geotechnical, structural, and civil engineering knowledge and background as well as their expertise in evaluating the performance of dams.

In preparing their reports, consultants inspect facilities and review surveillance data and other information prepared by departmental staff. The Department then prepares action plans based on the consultants' recommendations.

In November 1998, the Director's Safety Review Board met and evaluated Cedar Springs Dam, Perris Dam, and Devil Canyon Powerplant Second Afterbay.

Three boards of consultants were convened to review the plans for the construction of Crafton Hills Dam on the East Branch of the SWP.

FERC Reviews. To comply with FERC regulations, consultants review FERC-licensed dams and power generation facilities owned by the Department. Consultants inspect facilities and review surveillance data and other information prepared by Department staff. The Department then prepares action plans based on the consultants' recommendations. These reviews, which may be conducted by one or more consultants, are scheduled every 5 years. In September 1998, the third 5-year FERC safety consulting board inspection for the Warne Powerplant was conducted.

Maintaining Other Project Facilities

The Department continually monitors all SWP facilities and performs repairs and modifications as necessary to ensure safe, reliable water delivery. Headquarters' staff conduct biannual inspections of project facilities and complete inspection reports for each field division. The Oroville and San Joaquin field divisions are inspected in the spring and summer of even-numbered years and the Delta, San Luis, and Southern field divisions are inspected in odd-numbered years. Each report lists action items to ensure that follow-up inspections and reports are made.

Arroyo Pasajero Program

The Arroyo Pasajero and its tributaries drain approximately 530 square miles of the Coast Mountains west of the California Aqueduct in Fresno County. The Arroyo Pasajero's downstream juncture with the California Aqueduct, also known as the San Luis Canal between San Luis Reservoir and Kettleman City, poses a particularly difficult operational and maintenance problem for the SWP. During periods of heavy rainfall, high flows in the Arroyo Pasajero and its tributaries transport heavy sediment loads eroded from the mountains. Over many eons, sediment transported by Arroyo floods formed a 450-square-mile alluvial fan extending from its apex at the eastern margin of Pleasant Valley (Anticline Ridge) to the San Joaquin Valley trough. The California Aqueduct traverses the Arroyo's alluvial fan and forms a barrier to Arroyo flood flows. Flood control facilities include a retention basin designed to store storm runoff and sediment upstream of the Aqueduct, a siphon to release floodwaters east of the Aqueduct, and drain inlets to release floodwaters into the Aqueduct. The volumes of runoff and sediment deposition are much greater than estimated during the original design of the retention basin in the mid-1960s.

USBR designed and constructed the San Luis Canal segment of the California Aqueduct. USBR and the Department share costs of operating and maintaining the facility. Since the floods of 1969, USBR and the Department have worked to minimize the effects of

heavy flooding. In 1980, asbestos was discovered in the Metropolitan Water District of Southern California's water supply and traced to runoff from the Arroyo Pasajero and other Diablo range streams. This discovery, in conjunction with the high cost of removing sediment from the Aqueduct, led the Department to adjust operating procedures to minimize runoff entering the Aqueduct.

Long-Term Programs. In 1990, the Department sought the assistance of the U.S. Army Corps of Engineers to identify viable long-term solutions to the Arroyo Pasajero flooding and sediment problems. In 1992, the Corps issued the *Arroyo Pasajero Reconnaissance Report,* which demonstrated a federal interest in flood control at Arroyo Pasajero. The feasibility study—started in 1994 as a joint effort between the Department and USBR—provides a more rigorous analysis of the flooding and sedimentation problems and evaluates potential solutions in greater detail. The study is currently scheduled to run through late 1999, with a projected cost of $7.86 million. The Department, as local sponsor, is committed to 50 percent of the total study cost, with one-half of this commitment met by providing in-kind services for the study. Under the Department's agreement with USBR for the Joint-Use Facilities of the San Luis Unit, USBR is paying 45 percent of the Department's study cost.

In April 1998, the Alternatives Formulation Briefing milestone was held at the Corps' South Pacific Division Office in San Francisco. The goal of this milestone briefing was to obtain Corps Headquarters' approval of the study findings and the plan formulation of the project alternatives prior to completing the draft feasibility report. The AFB was a success, with Headquarters' Planning and Policy Review branches providing some guidance on how to proceed with the draft feasibility report and forego the Feasibility Review Conference. Following the AFB Conference, the Corps and local sponsor revised aspects of the feasibility investigation pursuant to Corps Headquarters' guidance and completed an administrative draft in December 1998 for review by internal Corps offices, the Department, USBR, and their respective water contractors. Although the estimated costs and benefits are still being reviewed, the public draft, to be released in early 1999, is expected to identify two project alternatives with a federal interest:

- the enlarged Westside Detention Basin as the Corps' national economic development plan, at an estimated cost of $238 million and benefit to cost ratio of 1.7:1; and
- the Pasajero Gap Detention Dam as a possible locally preferred plan, at an estimated cost of $225 million and a benefit-to-cost ratio of 1.2:1.

The Department, with the support of the State Water Contractors, has begun providing funding and staff support to a Coordinated Resource Management Plan group called the Stewards of the Arroyo Pasajero Watershed. The mission of the CRMP is "to improve the Arroyo Pasajero watershed through erosion and sediment control by implementing improved land management practices that will sustain and promote the aesthetics, environmental quality, and economic viability of the watershed." It is believed this program will increase watershed infiltration as well as decrease erosion, complementing any structural flood control improvements, and thereby reduce the threat the Arroyo Pasajero poses to the California Aqueduct and surrounding communities.

Cantua Creek Stream Group. The Department continued a reconnaissance-level study of flood control measures for Martinez, Domengine, Salt, and Cantua creeks; Arroyo Hondo; Arroyo Ciervo; and Tumey Gulch. The alternatives under evaluation include upstream dams, expanded west-side ponding basins, east-side ponding basins, channel improvements, and conveyance of floodwaters east of the Aqueduct to Fresno Slough. Efforts on the Arroyo Pasajero feasibility investigation delayed completion of the CCSG reconnaissance report. Completion of the administrative draft report is anticipated in fall 1999.

Based on the preliminary hydrologic and sediment transport findings of the reconnaissance study, the Department undertook the design of interim measures to reduce flood water and sediment inflows to the San Luis Canal from the Cantua and Salt creek drain inlets. By maximizing the effectiveness of existing flood easements and placement of decanting weirs upstream of the existing drain inlets, the impounding capacity of the existing ponding basins prior to any releases into the Aqueduct can be enlarged approximately 10 times, providing up to a 10-year flood impoundment. These measures will

prevent significant volumes of sediment from being transported into the Aqueduct during the more frequent floods. Construction is expected during summer 1999.

Repairs and Modifications. Table 11-1 presents information, arranged chronologically, about significant scheduled and unscheduled outages at SWP pumping and powerplants in 1998. The table includes information about incidents resulting in outages exceeding 14 days.

Table 11-1
Outages for Maintenance and Repair of Facilities in 1998, by Month

Month	*Facility*	*Description*
January	Banks Pumping Plant	Unit 7 out of service from January 3 to February 2 for discharge valve repair.
	Devil Canyon Powerplant	Unit 1 out of service from January 5 to February 6 for annual maintenance.
	Gianelli Pumping-Generating Plant	Unit 7 out of service from January 12 to May 1 for biennial maintenance.
	Gianelli Pumping-Generating Plant	Unit 8 out of service from January 12 to April 2 for biennial maintenance.
	South Bay Pumping Plant	Unit 4 out of service from January 14 to February 9 for wiring modifications and preventive maintenance.
	Teerink Pumping Plant	Unit 3 out of service from January 16 to November 12 for annual maintenance.
	Chrisman Pumping Plant	Unit 1 out of service from January 20 extending into 1999 for motor rewind and stay vane replacement.
	South Bay Pumping Plant	Unit 3 out of service from January 26 to March 10 for motor replacement.
	Badger Hill Pumping Plant	Unit 6 out of service from January 26 to February 26 for pump impeller repair.
February	Banks Pumping Plant	Unit 7 out of service from February 2 for annual maintenance. Expected to extend into 1999.
	Mojave Siphon Powerplant	Unit 2 out of service from February 2 to April 13 for brake refurbishment.
	Thermalito Powerplant	Unit 3 out of service from February 2 to March 12 for annual maintenance.
	Pearblossom Pumping Plant	Units 1 and 2 out of service from February 3 to March 4 for transformer KYA repair.
	South Bay Pumping Plant	Unit 9 out of service from February 7 to May 12 for discharge valve repair.
	South Bay Pumping Plant	Unit 4 out of service from February 9 for motor replacement and pump repair. Completion expected by March 1, 1999.
	Warne Powerplant	Unit 1 out of service from February 10 to June 26 for work to prevent silt intrusion.
	Warne Powerplant	Unit 2 out of service from February 10 to June 23 for work to prevent silt intrusion.
	Pearblossom Pumping Plant	Units 7 and 9 out of service from February 11 to March 2 for work in Pool 58.
	Pearblossom Pumping Plant	Unit 5 out of service from February 16 to March 2 for work in Pool 58.
	Pearblossom Pumping Plant	Unit 4 out of service from February 17 to March 2 for work in Pool 58.
	Devil's Den Pumping Plant	Unit 6 out of service from February 26 to March 18 for discharge valve repair.
March	Edmonston Pumping Plant	Unit 5 out of service from March 2 to May 5 for unit breaker replacement.
	Pearblossom Pumping Plant	Units 4 and 5 out of service from March 4 to March 23 for transformer KYB testing.
	Pearblossom Pumping Plant	Units 7 and 9 out of service from March 5 to March 20 for repairs on Unit 9's discharge valve and Line No. 3.
	Las Perillas Pumping Plant	Unit 4 out of service from March 10 to April 10 for annual maintenance.
	Badger Hill Pumping Plant	Unit 6 out of service from March 12 to April 3 for impeller repair.
	Thermalito Powerplant	Unit 2 out of service from March 16 to April 23 for annual maintenance.
	South Bay Pumping Plant	Unit 7 out of service from March 25 to June 2 for motor replacement.
	Badger Hill Pumping Plant	Unit 1 out of service from March 27 to April 10 for installation of motor surge protection equipment.

Table 11-1
Outages for Maintenance and Repair of Facilities in 1998, by Month

Month	*Facility*	*Description*
April	South Bay Pumping Plant	Unit 2 out of service from April 1 to April 30 for wiring modifications.
	Reid Gardner Powerplant (NV)	Unit 4 out of service from April 4 to May 1 for annual maintenance.
	Las Perillas Pumping Plant	Unit 5 out of service from April 10 to May 5 for annual maintenance.
	Thermalito Powerplant	Unit 4 out of service from April 27 to July 23 for annual maintenance.
	Barker Slough Pumping Plant	Unit 5 out of service from April 28 to May 14 for deferred maintenance response.
May	Banks Pumping Plant	Unit 1 out of service from May 1 to June 12 for annual maintenance.
	Gianelli Pumping-Generating Plant	Unit 5 out of service from May 8 for stator rewind and unit breaker replacement. Completion expected by August 25, 1999.
	Pearblossom Pumping Plant	Unit 4 out of service from May 14 to June 2 for annual maintenance.
	Mojave Siphon Powerplant	Unit 1 out of service from May 18 to June 16 for cooling water system repairs.
	Banks Pumping Plant	Unit 6 out of service from May 25 to June 23 for intermediate guide bearing replacement.
June	Gianelli Pumping-Generating Plant	Unit 1 out of service from June 1 to June 18 for high speed rotor amortisseur winding repair.
	Thermalito Diversion Dam Powerplant	Unit 1 out of service from June 2 to July 3 for annual maintenance.
July	South Bay Pumping Plant	Unit 6 out of service from July 13 for pump replacement and motor repair. Completion expected by September 1, 1999.
	Banks Pumping Plant	Unit 8 out of service from July 20 to October 1 for annual maintenance.
	Chrisman Pumping Plant	Unit 4 out of service from July 21 to August 6 for testing and cleaning up smoke damage.
	Chrisman Pumping Plant	Unit 9 out of service from July 21 to September 2 for discharge valve repairs.
	Chrisman Pumping Plant	Unit 5 out of service from July 24 to August 6 for transformer KYB repair.
	Dos Amigos Pumping Plant	Unit 5 out of service from July 28 for shaft and rotor rim repair. Completion expected by June 30, 1999.
August	Mojave Siphon Powerplant	Unit 1 out of service from August 1 to August 14 for defective relay replacement.
	Mojave Siphon Powerplant	Unit 3 out of service from August 17 for work on Line No. 3. Completion expected by March 9, 1999.
	Chrisman Pumping Plant	Unit 8 out of service from August 18 to September 2 for work on Unit 9.
	Devil's Den Pumping Plant	Units 1, 2, and 3 out of service from August 26 to September 30 for repair of transformer KYA.
September	Chrisman Pumping Plant	Unit 9 out of service from September 2 for pump repairs. Completion expected by March 10, 1999.
	Barker Slough Pumping Plant	Unit 6 out of service from September 11 to September 25 for mechanical shaft seal replacement.
	Chrisman Pumping Plant	Unit 4 out of service from September 14 to October 2 for impeller and stay vane repair.
	Gianelli Pumping-Generating Plant	Unit 6 out of service from September 7 to October 9 for installation of main unit breakers.
October	Hyatt Powerplant	Unit 1 out of service from October 1 to November 5 for annual maintenance.
	Thermalito Powerplant	Unit 2 out of service from October 5 to December 8 for annual maintenance and exciter repair.
	Edmonston Pumping Plant	Unit 14 out of service from October 5 to October 30 for motor breaker retrofit.
	Pine Flat Powerplant	Unit 2 out of service from October 7 to November 20 for annual maintenance.
	Oso Pumping Plant	Unit 5 out of service from October 11 to November 24 for testing and contact adjustment.
	Devil's Den Pumping Plant	Unit 4 out of service from October 11 to October 26 for discharge valve repair.
	Chrisman Pumping Plant	Unit 8 out of service from October 13 to October 28 for air release valve and controller replacement.

Table 11-1
Outages for Maintenance and Repair of Facilities in 1998, by Month

Month	*Facility*	*Description*
	Oso Pumping Plant	Unit 7 out of service from October 13 for rotor pole replacement. Expected to extend into 1999.
	Pearblossom Pumping Plant	Unit 7 out of service from October 22 for pump casing and wear ring repair. Completion expected by July 14, 1999.
	Teerink Pumping Plant	Unit 1 out of service from October 26 for annual maintenance. Completion expected by August 30, 1999.
	Badger Hill Pumping Plant	Unit 1 out of service from October 28 for annual maintenance. Completion expected by February 5, 1999.
	Badger Hill Pumping Plant	Unit 6 out of service from October 26 to November 17 for annual maintenance.
November	Dos Amigos Pumping Plant	Unit 4 out of service from November 2 to November 25 for biennial maintenance.
	Gianelli Pumping-Generating Plant	Units 3 and 4 out of service from November 2 to December 12 for installation of main unit breakers.
	Hyatt Powerplant	Unit 2 out of service from November 9 for annual maintenance. Completion expected by January 14, 1999.
	Devil Canyon Powerplant	Unit 3 out of service from November 9 to December 14 for annual maintenance.
	South Bay Pumping Plant	Unit 9 out of service from November 12 for pump repairs. Completion expected by July 17, 1999.
	Dos Amigos Pumping Plant	Unit 3 out of service from November 12 to December 14 for vane control system inspection.
	Badger Hill Pumping Plant	Unit 2 out of service from November 19 for annual maintenance. Completion expected by February 9, 1999.
December	Warne Powerplant	Unit 1 out of service from December 1 during Peace Valley Pipeline inspection. Completion expected by February 28, 1999.
	Warne Powerplant	Unit 2 out of service from December 1 for annual maintenance and during Peace Valley Pipeline inspection. Completion expected by February 28, 1999.
	Polonio Pass Pumping Plant	Unit 6 out of service from December 3 for discharge valve repair. Completion expected by May 30, 1999.
	Dos Amigos Pumping Plant	Unit 6 out of service from December 4 for biennial maintenance. Completion expected by January 8, 1999.
	Buena Vista Pumping Plant	Unit 5 out of service from December 4 for impeller replacement. Expected to extend into 1999.
	Thermalito Powerplant	Unit 3 out of service from December 14 for annual maintenance and exciter repair. Completion expected by February 4, 1999.
	Mojave Siphon Powerplant	Unit 2 out of service from December 15 for work on Line No. 2. Completion expected by May 3, 1999.
	Banks Pumping Plant	Unit 8 out of service from December 19 for discharge valve repair. Completion expected by January 22, 1999.
	Dos Amigos Pumping Plant	Unit 3 out of service from December 24 for testing with vibration monitoring equipment. Completion expected by January 29, 1999.
	Chrisman Pumping Plant	Unit 2 out of service from December 28 for pump-case inspection and air-valve replacement. Completion expected by January 22, 1999.

Information for this chapter was provided by the Division of Operations and Maintenance and the Division of Safety of Dams.

Chapter 12

Engineering and Right of Way

Scenic sunset on Aqueduct near
Edmonston Pumping Plant

Significant Events

- Between January 1, 1998, and December 31, 1998, the Division of Engineering worked on 56 design projects and another 50 construction contracts.
- A contract for emergency temporary repairs to the California Aqueduct at mileposts 54.95, 62.29, and 66.71 was awarded in August 1997 and completed in January 1998. A small seep in the embankment suddenly increased to a 1,000-gallon-per-minute leak at milepost 54.95 and required lowering the water level in the canal. During dewatering, a portion of the canal bank at milepost 62.29 slid into the canal and the wingwalls at milepost 66.71 check structure shifted. The work at these locations was performed while the canal was partially full to prevent additional drawdown failures.
- In February 1998, a second contract was let to make permanent repairs at milepost 54.95. A portion of the canal was dewatered using two large cofferdams to block the repair area. In March 1998, a slipout occurred upstream at milepost 52.5. The repairs for this area were added to this contract.
- Several repairs were made at Clifton Court Forebay. Work on this facility included repairing the trunnion anchorage and reinstalling one of the intake gates damaged in 1996 and removed from service.
- In winter 1998, high drainage flows eroded the soil from the Santa Clara Pipeline at milepost 29.79, exposing a portion of the pipe. This portion of the pipe was repaired by encasing the exposed section in concrete and restoring a blowoff that had been damaged.
- All major construction activities on the Coastal Branch Phase II were completed, with the exception of a few equipment contracts.
- Several additional emergency repairs were made to the canal lining during winter 1998. These repairs occurred at various locations, including the intake channel to Edmonston Pumping Plant Forebay and along the East Branch from milepost 327 to milepost 330.

Construction of the initial facilities of the State Water Project began in 1957 with the relocation of the Western Pacific Railroad yards and Highway 70 near Oroville. In 1963, work began on the California Aqueduct, and by 1968 the SWP was delivering water to long-term contractors in the San Joaquin Valley. The SWP was able to deliver water to Lake Perris, its southernmost point, with the 1973 completion of its facilities.

From the early 1970s to the late 1980s, design and construction activities centered on building power plants and adding pumping units and turbine-generators deferred from the initial construction of the SWP; enlarging or extending aqueduct reaches; and providing facilities to ensure water quality in the Delta. In the 1990s, design and construction activities focused on repairing and replacing components of existing facilities, constructing Phase II of the Coastal Branch to deliver water to San Luis Obispo and Santa Barbara counties, and extending the SWP to the San Gorgonio Pass Water Agency service area.

Division of Engineering Activities

From January 1998 through December 1998, the Division of Engineering worked on numerous design projects. Table 12-1 lists those projects along with expected or actual completion dates. In addition to designing those projects, staff conducted deficiency studies of dams, canal embankments, and other SWP facilities, including Oroville, Feather River Fish Barrier, Thermalito Afterbay, Del Valle, Cedar Springs, Castaic, and Pyramid dams; Peace Valley Pipeline; and Lower Quail Canal. The investigations helped the Department develop contracts to construct remedial seepage control filters at Lower Quail Canal embankment and perform a seepage repair to arrest and prevent subsurface erosion along Peace Valley Pipeline. The Department also tested potential grouts for use in future grouting of the instrumentation tubing in the core of Oroville Dam.

Fifty construction contracts were either in progress or completed from January 1998 through December 1998. These projects are listed in Table 12-2. The table also shows contract costs, dates contractors received the notice to begin work, specification numbers, and the expected or actual contract acceptance dates. Resolution of contract claims may extend the actual contract closeout beyond the acceptance date. The acceptance date is the date the deputy director officially accepts the work and the completion date of the work precedes official acceptance of the contract. Table 12-2 shows actual costs of completed work or estimated costs of construction in progress.

Tables 12-1 and 12-2 are organized geographically according to construction divisions. Within each division, facilities where design or construction activities occurred are listed alphabetically. Activities at each facility are listed chronologically according to the date work began.

Oroville Division

Feather River Fish Hatchery. The contract, awarded in May 1998, is scheduled for completion in June 1999. Project features include constructing new rearing ponds, a hatchery building to include Americans with Disabilities Act modifications, a new ultraviolet disinfection building, demolition of selected existing facilities, and modifications to the Oroville Area Control Center.

Emergency Underwater Salvage. In January 1998, a 42-foot work boat from the Division of Operations and Maintenance abruptly sank at Lake Oroville where it was moored near the Hyatt Powerplant Intake Structure. Two emergency contracts were let, one to protect the lake water against pollution from leaking diesel fuel, and the other to raise and salvage the work boat to prevent more fuel from leaking. Work was successfully completed within a few days.

Table 12-1
Design Activities, January 1998 through December 31, 1998, by Division

Construction Division and Facility	*Construction Contract*	*Date Design Began*	*Design Estimated Completion Date*
Oroville Division			
Lake Oroville	Emergency underwater services	January 1998	January 1998
	Emergency boat salvage	January 1998	January 1998
	Lime Saddle campground	September 1998	August 1999
	Debris removal	May 1998	July 1998
Oroville Wildlife Area	Reinforced levee notch	December 1997	June 1998
Hyatt Powerplant	Ceiling replacement	June 1998	January 1999
	Renovate electrical controls for intake gate	July 1998	January 2000
	Turbine refurbishment	May 1997	February 1999
Thermalito Powerplant	15 kV switchgear	September 1997	August 1998
	Furnish automatic voltage regulator	June 1997	July 1998
Hyatt Powerplant and Thermalito Powerplant	Governor replacement	May 1997	October 1999
Delta Facilities			
South Delta	Sherman Island fish screens	July 1997	June 1998
Morrow Island	M-Line and C-Line levee raising and outfall renovations	February 1998	April 1998
Roaring River Slough	Levee and fish screen repair	May 1998	July 1998
North San Joaquin Division			
Clifton Court Forebay	Trashrack replacement	March 1998	January 2000
California Aqueduct	Canal seepage and concrete repair, mileposts 54.95, 62.29, and Clifton Court; pipeline repair, milepost 29, and landslide repair, mileposts 35.4 and 52.5	September 1997	February 1998
South Bay Aqueduct	Remove sediment and repair tank	September 1998	December 1998
South Bay Pumping Plant	Plant modifications	February 1998	September 1999
San Luis Division			
California Aqueduct	Flood easement restoration, milepost 135	November 1998	April 1999
Merced River, Ratzlaff Reach	Salmon habitat restoration	December 1998	February 1999
O'Neill Forebay	Madeiros area boating facilities (on hold)	September 1996	August 1999
South San Joaquin Division			
Badger Hill Pumping Plant	Pump refurbishment (on hold)	October 1998	August 1999
Edmonston Pumping Plant	Pump inlet and first stage modifications	February 1996	June 2002
Mojave Division			
California Aqueduct	Canal lining and road repair, mileposts 324.6, 330.32, 305, pools 43, 47, and 65	May 1998	October 1998

Table 12-1
Design Activities, January 1998 through December 31, 1998, by Division

Construction Division and Facility	*Construction Contract*	*Date Design Began*	*Design Estimated Completion Date*
	Emergency canal liner and forebay liner repairs, mileposts 326 to 331	January 1998	January 1998
Castaic Dam	Outlet tower access bridge repair	April 1998	August 1998
Pearblossom and Oso Powerplants	Furnish spare coils and materials	February 1998	September 1998
Mojave Siphon Powerplant	Revegetation	October 1997	July 1998
Castaic Lake	Recreation facilities renovation, east ramp area	January 1999	March 2000
Field Division Headquarters	Building and site work	May 1998	April 1999
Santa Ana Division			
East Branch Extension	Crafton Hills Reservoir	May 1997	September 1999
	Greenspot, Crafton Hills, and Cherry Valley pump stations	May 1997	October 1999
	Furnish pumps, motors, and variable frequency drives for Greenspot, Crafton Hills, and Cherry Valley pump stations	July 1997	June 1999
	Furnish switchgears for Greenspot, Crafton Hills, and Cherry Valley pump stations	September 1997	April 1998
	Furnish transformers for Greenspot, Crafton Hills, and Cherry Valley pump stations	December 1997	October 1998
	Pipeline Reach 1	April 1997	October 1998
	Pipeline Reach 2	June 1997	October 1998
	Pipeline Reach 3	May 1997	December 1999
	Furnish ANSI butterfly valves	July 1997	August 1999
	Furnish AWWA butterfly valves	July 1997	July 1999
	Furnish ANSI ball valves	July 1997	July 1999
	Install fiber optic cable, Greenspot to Crafton Hills pump stations	June 1999	February 2000
	Valve vaults, Morton Canyon and Carter Streets	November 1998	February 2000
	Furnish and install control and communication system	January 1998	February 2000
	Furnish circuit breakers, Greenspot and Crafton Hills pump stations	December 1997	November 1998
Devil Canyon Second Afterbay	Revegetation	October 1996	April 1998
Devil Canyon Afterbay	Inland feeder connection	July 1997	June 1998
Santa Ana Pipeline	Modifications at milepost 433.06, Box Springs turnout	April 1998	August 1998
	Sugarloaf Mountain road repair and drainage repair	July 1998	June 1999

Table 12-1
Design Activities, January 1998 through December 31, 1998, by Division

Construction Division and Facility	*Construction Contract*	*Date Design Began*	*Design Estimated Completion Date*
San Bernardino Tunnel	Surge chamber seismic modification	January 1998	August 1998
Multiple Divisions			
San Luis, San Joaquin, and Southern Field Divisions	Hydroblast and recoat cranes and access bridge	March 1998	April 1998
Oso and Pearblossom Pumping Plants, Alamo, Warne, and Devil Canyon Powerplants	PMT replacement	May 1997	October 1999
	Seal coat and slurry seal roads and paved areas: Oroville, Southern, Delta, San Luis, and San Joaquin field divisions	March 1996	June 1998
Miscellaneous			
Headquarters in Sacramento	Refurbish conference room 1131	September 1998	October 1998
Sacramento River*	Rancho Llano Seco, Goose Lake flood relief structure modifications	July 1998	September 1998

*Non-SWP Activities

Table 12-2
Construction Activities, January 1998 through December 1998, by Division

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Acceptance Date (Expected or Actual)*	*Contract Costs (Thousands of dollars)*
Oroville Division				
Feather River Fish Hatchery and Oroville Area Control Center	Expand hatchery and perform ADA modifications (97-24)	May 1998	June 1999	1,944
Oroville Reservoir	Emergency underwater services (98-02)	January 1998	March 1998	58
	Emergency boat salvage (98-03)	January 1998	March 1998	66
	Debris removal (98-13)	August 1998	December 1998	210
Thermalito Pumping-Generating Plant	Furnish automatic voltage regulators—Unit Nos. 1 thru 4, Thermalito Pumping-Generating Plant (98-12)	September 1998	April 1, 2000	521
Delta Facilities				
South Delta	Construct fish screens, Horseshoe Bend, Sacramento River (97-14)	August 1997	September 1998	522
	Fish screens, Sherman Island (98-07)	July 1998	June 2000	1,830
Rock Barriers	Construct temporary rock barriers—1998, 1999, and 2000: Middle River, Old River, and Grant Line Canal (97-23)	January 1998	December 2000	2,289

Table 12-2
Construction Activities, January 1998 through December 1998, by Division

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Acceptance Date (Expected or Actual)*	*Contract Costs (Thousands of dollars)*
Suisun Marsh Facilities				
Roaring River Slough	Levee and fish screen repair (98-14)	August 1998	September 1998	1,268
Morrow Island Distribution System	M-Line and C-Line levee rising and outfall renovation (98-09)	July 1998	December 1998	842
North San Joaquin Division				
California Aqueduct	Emergency repair, mileposts 54.95, 62.29, and 66.71 (97-20)	August 1997	January 1998	1,361
	Emergency canal repair, mileposts 54.95 and 52.5 (98-06)	February 1998	July 1998	4,175
Banks Pumping Plant	Furnish bulkhead gates (97-16)	October 1997	November 1998	208
San Luis Division				
Romero Overlook	Replace roof—Romero Overlook, vehicle repair and mobile equipment buildings (97-15)	September 1997	January 1998	218
Miscellaneous	Emergency protection measures downstream of Los Banos Detention Dam (98-05)	February 1998	June 1998	347
Coastal Branch Phase I				
Las Perillas and Badger Hill Pumping Plants	Furnish replacement switchgear and excitation system—Las Perillas and Badger Hill pumping plants (94-28)	November 1994	May 1999	713
Coastal Branch Phase II				
Pipeline	Construct pipeline reaches 5A1 and 5A2 (95-18)	August 1995	September 1998	65,498
Devil's Den, Bluestone, and Polonio Pass Pumping Plants	Furnish pump units (93-25)	December 1993	February 1999	4,541
	Furnish power transformers—Devil's Den, Bluestone, and Polonio Pass pumping plants (94-11)	July 1994	April 1998	983
	Complete construction—three pumping plants (94-31)	March 1995	May 1999	17,500
Valves	Furnish ball valves (93-34)	April 1994	May 1999	4,834
	Furnish butterfly valves and turbine bypass valve—Devil's Den Pumping Plant to Vandenberg AFB (94-06)	July 1994	May 1999	4,581
Miscellaneous	Furnish engine generator sets—Las Perillas Pumping Plant to Lopez Turnout (95-03)	June 1995	March 1998	800

Table 12-2
Construction Activities, January 1998 through December 1998, by Division

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Acceptance Date (Expected or Actual)*	*Contract Costs (Thousands of dollars)*
	Furnish acoustic velocity flowmeters—Devil's Den to Valve Vault facility (95-05)	June 1995	April 1998	393
	Seed and control erosion (96-16)	September 1996	October 1998	271
South San Joaquin Division				
Chrisman Pumping Plant	Furnish stator coils (92-11)	July 1992	January 1998	595
Teerink Pumping Plant	Furnish spare coils and materials (97-02)	August 1997	May 1999	374
Tehachapi Division				
Edmonston Pumping Plant	Furnish pump spare parts, Units 1, 3, 5, 7, 9-14 (96-25)	January 1997	June 1998	2,091
	Furnish 15.8 kV circuit breakers (97-01)	April 1997	March 2000	10,436
	Install remote terminal units (97-09)	August 1997	October 1998	263
West Branch				
Angeles Tunnel	Furnish intake gate stems, Angeles Tunnel intake works (97-07)	October 1997	March 1999	870
Gorman Creek Bypass Channel	Restore channel (97-13)	September 1997	June 1999	7,500
Oso Pumping Plant	20-ton trolley for bridge crane (96-24)	June 1997	August 1998	218
Mojave Division				
Mojave Siphon Powerplant	Furnish and install turbines, generators, and governors (89-13)	August 1989	September 1999	14,723
	Furnish and install butterfly valves—Mojave Siphon and Devil Canyon powerplants (91-15)	August 1991	July 1999	6,314
	Furnish and install acoustic velocity flow meters (93-18)	October 1993	May 2000	437
	Construct valve vaults (97-25)	April 1998	July 1999	3,116
Pearblossom Pumping Plant Enlargement, Phase II	Furnish and install vertical centrifugal pumps (87-04)	May 1987	December 1999	2,780
Aqueduct	Canal lining and road repair, milepost 305.10 to milepost 305.44, milepost 323.25 to milepost 330.32, and milepost 365.73 to milepost 395.71 (98-25)	December 1998	September 1999	4,655
	Emergency canal lining and forebay liner repair, milepost 326.77 to milepost 330.82 and Edmonston Pumping Plant (98-01)	January 1998	June 1998	7,947
Santa Ana Division				
East Branch Enlargement	Furnish and install turbines, governors, and valves (87-15)	July 1987	Units rejected	10,265

Table 12-2
Construction Activities, January 1998 through December 1998, by Division

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Acceptance Date (Expected or Actual)*	*Contract Costs (Thousands of dollars)*
Devil Canyon Powerplant	Site work (96-20)	September 1997	April 1999	3,338
San Bernardino Tunnel	Reconstruct intake (95-07)	July 1995	Pending	25,531
Santa Ana Pipeline	Modifications at milepost 433.06, Santa Ana Pipeline (98-20)	October 1998	June 1999	1,400
Multiple Divisions	Furnish steel pipe sections, Delta and Southern field divisions (96-26)	January 1997	June 1998	650
	Remove and replace storage tanks: Oroville, Delta, and San Luis field divisions (97-11)	August 1997	June 1999	572
	Furnish 230 kV SF6 power circuit breakers and SF6 gas processing carts: Banks and Pearblossom pumping plants (97-26)	March 1998	July 1999	855
	Emergency repairs to canal lining and fore-bay liner: milepost 326.77 to 330.82 and Edmonston Pumping Plant Forebay (98-01)	January 1998	June 1998	7,947
	Repair canal seepage, roads, and concrete, and erect monument signs (98-04)	April 1998	February 1999	2,196
	Recoating outdoor gantry cranes and access bridge: Dos Amigos, Buena Vista, Teerink, Chrisman, Edmonston, Oso, and Pearblossom pumping plants and Lake Perris (98-08)	July 1998	January 1999	208
	Seal coat and slurry seal paved areas, Butte to Los Angeles counties (98-10)	August 1998	June 1999	945

Debris Removal. A contract for removal and disposal of debris, including driftwood and logs, from McCabe Creek near Lake Oroville was awarded in August 1998 and completed in December 1998.

Automatic Voltage Regulators. A contract to furnish automatic voltage regulators for Units No. 1 through 4 at Thermalito Pumping-Generating Plant was awarded in September 1998 with a completion date in December 1999. Commissioning of the units is expected to be completed by April 2000.

Delta Facilities

Rock Barriers. The 2-year (1996 and 1997) contract for construction of seasonal temporary rock barriers in designated South Delta waterways (Middle River, Old River, and Grant Line Canal) was completed in December 1997. A new multi-year (1998, 1999, and 2000) contract was awarded in January 1998, with completion scheduled for December 2000.

As with previous contracts, the contractor will be directed to construct and later remove the temporary rock barriers at specified locations within the Delta waterways. Barriers are generally constructed at Old River (two sites), Middle River, and Grant Line Canal, with barrier installation and removal occurring in the spring and fall. The work includes constructing the barrier from rock and appurtenant equipment salvaged from the previous year and stockpiled adjacent to the site. Boat ramps to facilitate transfer of boats from one side of the barrier to the other were constructed in previous years at Old River and Grant Line sites.

Installation and removal of these temporary barriers is designed to enhance water levels and circulation in the south Delta for local agricultural diversion, assist fish migration, and facilitate the gathering of hydraulic data for the design of future permanent barriers.

Fish Screens. A contract to construct a set of fish screens for an agricultural diversion to Sherman Island at Horseshoe Bend on the Sacramento River was awarded in August 1997 and completed in September 1998. The work consisted of fabricating and installing a set of two fish screens, laying 200 feet of 24-inch-diameter intake pipeline, erecting a structural steel access platform on timber piling, and other appurtenances.

A second contract to construct additional fish screens at various locations on Sherman Island along the San Joaquin River was awarded in July 1998, with completion expected in March 2000. The work is similar to that described above. The engineer, however, will determine how many of the 12 possible sites will actually be built.

The screening of river agricultural diversions is required as part of the permit terms for the south Delta temporary rock barriers.

Suisun Marsh Facilities

Morrow Island Distribution System. A contract to repair and raise the levees of the M-Line and C-Line ditches of the Morrow Island Distribution System was awarded in July 1998 and completed in December 1998. Work consisted of repairing and raising the north and south levees using lime-treated embankment material, constructing levee roads, constructing a timber access platform, and installing slide gates at the M-Line ditch outfall pipes and at the C-Line outfall structure.

Roaring River Slough Distribution System. A contract for levee repair and fish screen repairs at Roaring River Slough was awarded in August 1998 and completed in September 1998. The work consisted of removing debris, placing compacted embankment material, placing aggregate base road surface, and filling scoured areas below existing fish screens with gabions, cellular concrete mattresses, and stone slope protection.

North San Joaquin Division

Banks Pumping Plant. A contract to fabricate four 10-foot by 12-foot steel bulkhead gates for Banks Pumping Plant intake was awarded in October 1997 and completed in November 1998.

Aqueduct Repairs. The following two emergency contracts and one urgent aqueduct repair contract were undertaken during this reporting period. Several new repair methods, techniques, and geomembrane materials were used.

Mileposts 54.95, 62.29, and 66.71. A contract for emergency temporary repairs to the California Aqueduct at mileposts 54.95, 62.29, and 66.71 was awarded in August 1997 and completed in January 1998.

At milepost 54.95, leakage increased to approximately 1,000 gallons per minute, causing great concern to O&M. The emergency repairs consisted of injecting grout to stabilize the embankment and laying a PVC liner on the canal concrete panels to stop the leakage and prevent further damage and displacement.

At milepost 62.29, a 140-foot section of the canal lining slipped into the Aqueduct. The broken concrete panels and debris were removed, and the cavity was backfilled with large-size gravel. Broken concrete panels were not replaced; this will be done at a later date. Pipe supports for an adjacent oil pipeline were repaired by the oil company.

At milepost 66.71, the wingwalls of check structure 12 were secured from further slippage with anchored tiebacks. The work at these locations was performed in the water because water deliveries could not be interrupted.

Aqueduct Repairs Mileposts 54.95 and 52.5. A second emergency canal repair contract was let in February 1998 to provide a permanent repair at milepost 54.95. Two large cofferdams, one upstream and the other downstream, were built to provide a dry 2,000-foot-long work area. Other items of work included excavating unstable canal embankment, constructing compacted embankment, extending the existing 60-inch corrugated metal pipe drain culvert

under the canal, constructing a reinforced concrete outlet structure for the culvert, removing damaged and displaced concrete panels, placing gravel and waterproof geomembrane materials on the canal slopes, and applying 2 inches of shotcrete.

Under the direction of staff from the departments of Water Resources and Fish and Game, a crew from the California Conservation Corps waded through shallow water in the 2,000-foot-long dewatered canal reach, netting large catfish and striped bass. These rescued fish were placed in a "fish hopper" and deposited in an adjoining portion of the canal.

In March 1998, a slipout occurred at milepost 52.5. Emergency repair work was initiated immediately under the milepost 54.95 contract. About 50,000 cubic yards of slide material were removed and a series of post-tensioned rock-bolt tiebacks were installed to stabilize the cut slope on the west side of the canal. In addition, the canal prism was reshaped and the canal sideslopes were covered with articulated concrete block mats to minimize erosion. The canal could not be emptied for operational reasons, so the repair work had to be performed in the water. All the repair work under this contract was completed July 1998.

Canal Seepage, Road, and Concrete Rapairs. Under an urgent contract, repair work began in April 1998 on four facilities described below. Work is scheduled to be completed in early 1999. The following operations are listed in Table 12-2 under Multiple Division Activities (Specification 98-04).

Clifton Court Forebay. Work on this facility included excavating eroded embankment areas, placing rock slope protection and concrete, repairing Intake Radial Gate No. 4 anchorage, and chip sealing operating roads.

Byron Road Bridge. Temporary repairs were made to the concrete deck of the Byron Road Bridge, which carries traffic over the Banks Pumping Plant intake channel. Traffic restrictions and truckload limits, as well as speed limit signs, were erected to protect the structure and prevent accidents. Permanent repairs of the bridge deck will be undertaken in the near future.

Operating Road Repairs. Numerous sections of the California Aqueduct primary operating roads were repaired from Orestimba Creek to the vicinity of O'Neill Forebay. The work consisted of filling potholes and applying asphaltic chip seals to 12 designated areas that varied in length from 100 feet to 4,000 feet.

Santa Clara Pipeline. Repair to a section of the Santa Clara Pipeline at milepost 29.79 was performed in August 1998. The pipe was uncovered and undermined by unusually high storm drainage in Mission Spring Creek due to El Niño in January 1998. Repair consisted of concrete encasement, restoring a blowoff, and reinforcing the streambed in the vicinity of the pipeline.

San Luis Division

Roof Replacement. Work on a contract to replace existing roof systems at the Romero Overlook Visitor Center, the Vehicle Repair Building at the San Joaquin O&M Center, and the Mobile Equipment Building at the Lost Hills O&M Subcenter was started in September 1997 and completed in January 1998.

The work consisted of selective demolition and asbestos abatement of existing roofing, insulation and flashing, removing and reinstalling equipment, constructing built-up roofing, installing sheet metal work and roof drains, applying sealants, and painting.

Emergency Protection. An emergency contract to provide protection for the California Aqueduct downstream of the Los Banos Detention Dam, and to prevent contamination of the water, was let in February 1998 and completed in June 1998.

The work consisted of constructing a notch in the right embankment of the aqueduct that would, if necessary, safely convey floodwater into the aqueduct and prevent it from flowing into the town of Los Banos in the San Joaquin Valley. The top of the notch was covered with filter fabric and articulated block mats. Rock slope protection was placed where required.

Monument Signs. Permanent monument signs were constructed at Sisk Dam and San Luis Reservoir, O'Neill Dam and Forebay, and Gianelli Pumping-Generating Plant. Work consisted of constructing a reinforced concrete sign structure at the Sisk and O'Neill dam sites and an unreinforced concrete pedestal with embedded steel support posts for an all-metal sign at the Gianelli plant. This work is listed in Table 12-2 under Specification 98-04, Multiple Division Activities.

Coastal Branch

Phase I Construction. Construction activities in this reach, which consists of approximately 13 miles of existing concrete-lined canal and Las Perillas and Badger Hills pumping plants, involved furnishing and replacing electrical switchgear and excitation systems at the existing pumping plants. The work started in November 1994 and is scheduled for completion in May 1999.

Phase II Construction. Construction of Coastal Branch Phase II added approximately 100 miles of pipeline to the existing Phase I facilities. The Department designed, managed, and supervised construction of 72 of the 100 miles; the remainder was designed and constructed by Central Coast Water Authority. All major facilities were sufficiently completed to start delivery of the treated water by mid-August 1997. All contract work, with the exception of the multiyear erosion control and seeding contract, was completed by the end of June 1998.

The following is a brief description of the facilities that were constructed under Phase II. A brief synopsis of potential and certified claims activities that resulted from the construction activities is also provided.

The Project. The Coastal Branch Phase II facilities consisted of approximately 100 miles of mostly buried pipeline. The steel pipeline, with inside diameters of 42 to 52 inches, was provided with a mortar interior lining and coal tar enamel exterior coating for corrosion protection and was extended from the new Phase II Devil's Den Pumping Plant in Kern County to Vandenberg Air Force Base in Santa Barbara County. Three pumping plants—Devil's Den, Bluestone, and Polonio Pass—lift the water 1,500 feet over the steep Tembler Mountain Range to the summit of Polonio Pass into CCWA's water treatment plant. From the water treatment plant, the treated water flows through the buried pipeline to its terminus at Vanderberg AFB, where it connects to CCWA's 42-mile-long pipeline, which terminates at Lake Cachuma northwest of the city of Santa Barbara. The system is capable of delivering 47,816 acre-feet of water per year. The first water flowed through the system in April 1997 and was used for testing the completed pipeline, pumping plants, storage tanks, surge tanks, and other appurtenant facilities.

Major Construction Activities. All major construction activities on the Coastal Branch Phase II were completed in early 1998, with the exception of a few equipment contracts. Work on these equipment contracts involved replacement and warranty work, which is scheduled to be completed in early 1999.

Environmental Protection. Construction of the Coastal Branch was the most closely studied, monitored, and mitigated construction project in the history of the SWP.

Eighteen ecological communities found along the pipeline route included dozens of sensitive plant and animal species, ranging from the San Joaquin kit fox to the burrowing owl and the red-legged frog. Before construction began, miles of fence were built along the construction area to protect the blunt-nosed leopard lizard. Construction of the fence, as well as removal of live lizards from the construction area, was under the supervision of environmental specialists. All participating personnel were trained in environmental responsibilities.

Native American cultural and ancient burial sites were found in the construction area, which prompted pipeline route changes to avoid disturbing these areas. Archaeologists documented each site and, along with State, federal, and local agencies, and tribal groups, closely monitored construction activities.

All construction contractors were required to prepare, submit for review and approval, and implement detailed plans and programs to protect the environment. These included plans for biological resources

(plants and animals), cultural resources, air quality, water quality control, erosion/dust control, traffic/noise abatement, and fire prevention and control.

The contractors were required to provide an on-site Environmental Control Supervisor to monitor the contractors' activities and ensure compliance with environmental requirements.

Contract Administration. As in most construction projects, changes in the scope of the original work may include increases or decreases in quantities, changes in design and alignment, and unforeseen conditions. These changes normally cause an increase in the cost of the contract and are handled through issuance of Contract Change Orders, which become part of the contract.

Such changes in the work often lead to disagreements and disputes between the owner, in this case the Department, and the contractors and their subcontractors. If disagreements cannot be settled through discussion and negotiations, the contractors and their subcontractors may file a potential claim with the Department that may develop into a certified claim.

On this project, as of the end of this reporting period, all but one of the prime contractor's certified claims have been settled. Negotiations continue on the outstanding claim issue. While there has been significant progress in resolving and settling construction claim issues, four complicated and complex issues of the claim remain to be resolved.

South San Joaquin Division

Chrisman Pumping Plant. Stator coils manufacturing began under a contract awarded in July 1992. Work was completed January 1998.

Teerink Pumping Plant. A contract for furnishing spare motor coils and appurtenant materials was awarded in August 1997, with completion expected in May 1999. Manufacturing is underway.

Tehachapi Division

Edmonston Pumping Plant. Work on a contract to furnish pump spare parts for pumping units 1, 3, 5, 7, and 9 through 14 was started in January 1997 and completed in June 1998. Manufacture of 15.8 kV circuit breakers for Edmonston Pumping Plant continues and is approximately 90 percent complete. This work began April 1997 and is scheduled for completion March 2000.

A contract to furnish and install remote terminal units for Edmonston Pumping Plant was awarded in August 1997 and completed in October 1998.

An emergency contract to repair and replace concrete liner panels at Edmonston Pumping Plant forebay intake channel was awarded in January 1998, with a 60-day completion date. The work was completed in June 1998. This contract is listed in Table 12-2 under the Multiple Division Section (Specification 98-01). The work consisted of removing dislodged and broken liner panels, placing drain rock for the slope and in voids created by missing panels, placing articulated concrete block mats on top of the drain rock, and removing accumulated drain rock at the invert. Most of the work had to be performed under water since the channel could not be emptied because of water delivery commitments.

West Branch

Angeles Tunnel. A contract to manufacture and furnish intake gate stems sections and appurtenances for this facility was awarded in October 1997 with completion scheduled for March 1999.

Gorman Creek. A contract to construct a bypass around the Peace Valley Pipeline and Warne Powerplant and restore an existing channel at Gorman Creek was awarded in September 1997. The notice to begin work, however, was postponed until spring 1998 because of heavy rainstorms caused by El Niño. Work was scheduled to begin in June 1998, but was delayed to July because of high groundwater caused by the heavy winter rains. The work is scheduled to be completed in June 1999.

The work consists of clearing, reconstructing, and restoring an existing diversion structure, removing an existing diversion channel, restoring Hungry Valley and Side Hill Siphons, removing two existing slide gates, constructing approximately 7,000 linear feet of a new 5-inch thick shotcrete-lined channel, relocating roads and a road crossing, reconstructing drainage facilities, and relocating fences.

Peace Valley Pipeline Repairs. Longitudinal internal cracks at two locations were discovered during a December 1998 inspection of the 12-foot diameter pipeline. Excavation at Station 284+70 revealed the exterior mortar cover to be fractured and the prestressing wire to be badly corroded and broken in numerous places. The pipe segment was repaired by encasing it in reinforced concrete. Although excavation at Station 206+80 and subsequent testing revealed intact mortar cover and prestressing wire, the pipe segment was also encased in concrete to prevent similar problems in the future. Work began in late December 1998 and was scheduled for completion by February 1999. The work was added to Specification 97-13, Gorman Creek Bypass Channel Restoration.

In early December 1998, two sections of the Lower Quail Canal experienced drawdown failure while being dewatered for routine inspection purposes. The embankment failure was apparently caused by high pore pressures within the embankment. An emergency contract was awarded at the end of December to repair the canal. The repairs will consist of constructing cofferdams and dewatering two portions of the canal. Broken concrete panels and slide material will be removed and the canal section rebuilt. A drainage system will be installed behind the concrete lining to prevent a recurrence of this type of failure by providing a way to remove groundwater during any future drawdowns. The repairs will be completed by the end of February 1999.

Oso Pumping Plant. Work to furnish and install a 20-ton infrared radio remote-control-operated, electric-driven trolley on an existing overhead traveling 60-ton bridge crane was started in June 1997 and completed in August 1998. Final activities involved operational testing, CAL-OSHA crane certification, and a personnel training program.

Emergency Road Repairs. The access road leading to Pyramid Dam had to be repaired under emergency conditions in February 1998. High flows in Piru Creek caused by heavy winter rains eroded the creek bank adjacent to the road. Truckloads of large rocks were deposited in the eroded area to fill the cavity caused by the eroding water and to prevent further damage. This work was performed under the emergency contract issued for repair of Edmonston Forebay and is listed in Table 12-2 under the Multiple Division Section. All work was completed by April 1998.

Mojave Division

Mojave Siphon Powerplant. All original contract work for the construction and installation of the three new generating units has been completed, except for final operational testing of the units and the repeatability test of the acoustic velocity flowmeters. These cannot be performed until May 2000 because of water delivery commitments and construction of the reinforced concrete vault structures to accommodate the new inlet valves.

Valves and Valve Vaults. Manufacturing work continues on the two new additional butterfly valves for the Mojave Siphon Powerplant. A contract to construct reinforced concrete vaults for these valves was awarded in April 1998, with completion expected in July 1999.

Pearblossom Pumping Plant. Remedial work continues on the three new pumps installed in 1986. This work consists of machining pump impellers and shafts and installing new mechanical pump seals. The work is being performed under warranty and the pump contract will not be accepted until this warranty work is satisfactorily completed. All work is scheduled to be completed in December 1999.

Aqueduct. Emergency canal lining repairs were performed at numerous locations along the East Branch of the California Aqueduct starting at milepost 327 and ending at milepost 330. Work started in January 1998 and was completed in April 1998.

The work consisted of removing broken and displaced canal concrete lining panels and debris, cleaning expansion joints, excavating trenches for waterproof geomembrane, anchoring concrete or shotcrete backfill, placing concrete slurry backfill in cavities where lining slabs had been displaced, placing waterproof geomembrane on top of existing concrete lining panels, applying shotcrete and new contraction joint sealant, and performing other work as directed.

A second contract to perform canal lining and road repairs at milepost 305.10 to milepost 305.44,

milepost 323.25 to milepost 330.32, and milepost 365.73 to milepost 395.71, was awarded in December 1998 and is scheduled to be completed in September 1999. The work is similar to that described for the contract above.

Santa Ana Division

Devil Canyon Powerplant. Negotiations continue with the turbine contractor regarding the rejection of the two units that do not meet all the specified operating criteria.

Site work. A contract to perform site improvements was awarded in September 1997 and is scheduled to be completed in April 1999.

San Bernardino Tunnel Intake. Work on the reconstruction of the intake started July 1995 and was completed in November 1997. Several items of work are being completed under warranty, and the contract will not be accepted until warranty work is satisfactorily completed.

Santa Ana Pipeline. A contract to repair and modify a section of the Santa Ana Pipeline was awarded in October 1998 and is scheduled to be completed in June 1999. The work consists of removing a section of damaged pre-stressed concrete pipe and replacing it with a Department-furnished steel pipe, constructing a reinforced concrete vault structure, and performing other modifications.

Multiple Divisions

The following is a brief description of construction activities that were included in contracts covering two or more construction divisions.

Steel Pipe Sections. The contract to manufacture steel pipe sections was awarded in January 1997 and completed in June 1998. The completed pipe sections were delivered to the Delta and Southern field divisions for storage. They are available for emergency repairs.

15.8kV Circuit Breakers. The manufacture of circuit breakers for Edmonston Pumping Plant, Gianelli Pumping-Generating Plant, and Devil Canyon Powerplant continues. Completion is scheduled for November 1999. Installation of the Gianelli breakers will be added by change order and is scheduled for completion in March 2000.

Storage Tanks. A contract to remove and dispose of existing underground storage tanks at the Oroville, Delta, and San Luis field divisions and install two new above-ground fuel tanks at the Oroville O&M Center was awarded in August 1997. The work is scheduled for completion in June 1999.

The underground tanks ranged in capacity from 10,000-gallon gasoline and diesel storage and 1,800-gallon copper-sulfate storage tanks, to 200-gallon used oil tanks. Cavities created by the tank removal were backfilled and surfaced with concrete or asphalt paving.

A new fuel-dispensing station, with above-ground tanks, was constructed at the Oroville O&M Center. The work consisted of furnishing and installing a 10,000-gallon gasoline tank and a 10,000-gallon diesel fuel tank with associated fuel-dispensing equipment.

Power Circuit Breakers. A contract to furnish 230 kV SF6 power circuit breakers and SF6 gas processing carts for Banks and Pearblossom pumping plants was awarded in March 1998, with completion scheduled in July 1999.

Crane Recoating. A contract to recoat outdoor gantry cranes and access bridge at Dos Amigos, Buena Vista, Teerink, Chrisman, Edmonston, Oso, and Pearblossom pumping plants and Lake Perris was awarded in July 1998, with completion scheduled in January 1999.

Road and Paved Areas. A contract to apply asphaltic seal coat and slurry seal to roads and paved areas, Butte to Los Angeles counties, was awarded in August 1998 and is scheduled to be completed in June 1999.

Miscellaneous Activities

Goose Lake Flood Relief Structure. A contract to excavate and place cement-treated base roadway surfacing and concrete on existing riprap bank protection adjacent to the cement-treated base was awarded in November 1998, with completion expected in June

1999. The work site is located in Rancho Llano Seco in Butte County adjacent to the Sacramento River.

Right of Way Activities

The Department spent a net total of $245.2 million to acquire rights of way and mitigation lands for the SWP from inception to December 31, 1998. From July 1 to December 31, 1998, the Department:

- finalized acquisition of easement rights over three parcels (9.61 acres) for a total price of $93,106 for the Coastal Branch, Phase II Project;
- acquired easement rights over two parcels (1.79 acres) for a total price of $15,234 for the East Branch Extension, Phase II Project;
- managed 88 leases for a total revenue of $284,316;
- sold an easement over one parcel of land for $10,200 as part of an easement exchange on Tejon Ranch;
- obtained 17 temporary entry permits for the Delta well decommissioning and East Branch Extension projects;
- issued 15 encroachment permits and collected fees of $11,245 for review and inspection costs;
- completed five encroachment reviews where the applicant had prior property rights;
- coordinated review of 11 tentative tract map developments within 1 mile of the Aqueduct; and
- entered into seven utility relocation agreements.

Information for this chapter was provided by the Division of Engineering and the Division of Land and Right of Way.

Chapter 13
Recreation

Bikers at Oroville recreation area

Significant Events

- California's first launching ramp designed especially for jet skis was dedicated in a ceremony on May 16, 1998, at Power Cove, Lake Perris, in Riverside County. Department of Boating and Waterways' Director Chuck Raysbrook spoke about the unique design and the start of National Safe Boating Week (May 16-22). The project includes a 4-lane concrete launching ramp, restrooms, a new parking lot with spaces for 55 cars and 63 car/trailers, area lighting, landscaping, and 30 picnic tables.
- The ribbon cutting and dedication of Arroyo Del Valle Trail by the East Bay Regional Park District Board of Directors took place on September 19, 1998. The new staging area and trail are key links in the regional trail that will eventually connect Lake Del Valle and EBRPD Shadow Cliffs Regional Park in Pleasanton. Initial funding for the 7-1/2 mile shoreline trail at Lake Del Valle was provided by a Land and Water Conservation fund grant from the Department to EBRPD.

The State Water Project is a multipurpose project that benefits millions of Californians. In addition to providing water supply, flood control, and habitat for fish and wildlife, the SWP offers extensive and varied recreational opportunities—tours, sightseeing, fishing, hunting, camping, boating, water skiing, bicycling, and swimming.[1]

Recreation Areas

The SWP has 37 developed recreation areas or sites throughout California, including 18 fishing access sites. Figure 13-1 shows the names and locations of each area.

Recreation Days

In 1998, SWP facilities received 4.20 million recreation days of use, a slight decrease from the 4.53 million recreation days recorded in 1997 (Table 13-1). Recreational use at the 18 developed fishing access sites and along the California Aqueduct Bikeway was down nearly 25 percent from 1997. A recreation day is defined as one individual user visiting a recreation site along the SWP during a 1-day period.

Most SWP recreation and visitor use was concentrated at the major reservoirs, where well-developed facilities accommodate the public. Fifty-three percent of the total SWP recreational use in 1998 occurred at the four major reservoirs in Southern California: Pyramid Lake, Castaic Lake, Silverwood Lake, and Lake Perris.

Since the SWP began delivering water in 1962, more than 150 million recreation days have been recorded at SWP recreational facilities.

Facility Planning

During 1998, the following planning activities for recreation facilities occurred.

- The Department of Boating and Waterways completed conceptual plans for shoreline improvements at the Sawpit Canyon Area at Silverwood Lake.
- Working drawings are being prepared by the Department of Boating and Waterways for boat launching facility improvements at these locations:
  Medeiros Area at San Luis Reservoir State Recreation Area;
  Castaic Dam left abutment launch ramps; and
  Pyramid Lake—Emigrant Landing Area.

New Facilities

Lake Oroville. The following new facilities were completed at Lake Oroville recreation areas.

- A fish-cleaning station and 4-unit restroom facility were added at the spillway area of Oroville Dam.
- A 4-unit restroom facility was added at the launch ramp in the North Forebay area.
- A boat-boarding dock was added at Wilbur Road boat ramp. Funding was provided by the Department of Boating and Waterways.

Lake Del Valle. The following new facilities were completed at Lake Del Valle recreation areas.

[1] According to the Davis-Dolwig Act (Water Code Sections 11925 *et seq.*), the Department has overall responsibility to acquire property, plan recreation, and ensure that enhancement of fish and wildlife habitat is included as part of the State Water Project, although the costs of these recreation activities are not borne by the water supply contractors. In addition, Federal Energy Regulatory Commission License Numbers 2100 and 2426 require the Department to plan for recreational and associated activities at licensed SWP facilities.

Figure 13-1
Names and Locations of SWP Recreation Areas

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. Access Walk-in Fishing (63 miles)
13. Cottonwood Road Fishing Access Site
14. San Luis Reservoir State Recreation Area
15. Los Banos Reservoir
16. Canyon Road Fishing Access Site
17. Mervel Avenue Fishing Access Site
18. Fairfax Fishing Access Site
19. Access to Walk-in Fishing (208 miles of accessibility along the aqueduct)
20. Three Rocks Fishing Access Site
21. Huron Fishing Access Site
22. Avenal Cutoff Fishing Access Site
23. Kettleman City Fishing Access Site
24. Lost Hills Fishing Access Site
25. Buttonwillow Fishing Access Site
26. Pyramid Lake State Recreation Area
27. Castaic Lake State Recreation Area
28. Munz Ranch Road Fishing Access Site
29. Bikeway from Quail Lake to Silverwood Lake (107 miles, not all accessible)
30. 70th Street West Fishing Access Site
31. Access Walk-in Fishing (83 miles)
32. Avenue S Fishing Access Site
33. 77th Street East Fishing Access Site
34. Longview Road Fishing Access Site
35. Silverwood Lake State Recreation Area
36. Lake Perris State Recreation Area
37. San Jacinto Wildlife Area

Table 13-1
Recreation Days Recorded in 1998, by Field Division and Facility

Field Division	*Number of Recreation Days*
Oroville Field Division	
Frenchman Lake	235,000
Antelope Lake	65,000
Lake Davis	130,000
Lake Oroville and Thermalito Forebay	419,700
Thermalito Afterbay and Oroville Wildlife Area	256,200
Total	**1,105,900**
Delta Field Division	
Lake Del Valle	283,000
Bethany Reservoir	32,500
Fishing Access Sites:	
Neils Hansen	100
California Aqueduct:	
Walk-In Fishing	700
Bikeway	100
White Slough Wildlife Area	11,300
Total	**327,700**
San Luis Field Division	
San Luis Reservoir, includes O'Neill Forebay and Los Banos Reservoir	473,000
California Aqueduct:	
Walk-In Fishing	12,500
Wildlife Areas	11,000
Total	**496,500**
San Joaquin Field Division	
Fishing Access Sites:	
Kettleman City	1,100
Lost Hills	1,000
Buttonwillow	1,100
California Aqueduct:	
Walk-In Fishing	6,700
Total	**9,900**
Southern Field Division	
Silverwood Lake	374,900
Lake Perris	1,007,400
Pyramid Lake	182,200
Castaic Lake	691,000
Fishing Access Sites:	
Quail Lake	1,500
77th Street East	100
Longview Road	100
California Aqueduct:	
Walk-In Fishing	2,400
Bikeway	500
Total	**2,260,100**
Grand Total	**4,200,100**

- A contractor for EBRPD installed 1,400 linear feet of water main at Arroyo Del Valle. The new water line brought water from Arroyo Road up to the new staging area and extended water service to the Department's property downstream of the dam.
- Ten family and two group barbecue units were installed in the day-use areas, along with 12 additional tables and benches.

Lake Perris. Construction of the Power Cove area was completed and dedicated in May. This area includes the State's first launching ramp designed especially for jet skis. In addition to the 4-lane launch ramp, other facilities provided are restrooms, a new parking lot for 55 cars and 63 car/trailers, area lighting, 700 linear feet of beach grading, landscaping, and 30 new picnic tables.

Improvements to Facilities

The following improvements were made at Lake Oroville during 1998 to help meet recreational demands.

- Informational bulletin boards ("You Are Here X Type") were installed.
- Two 300-foot channel runs were added at the Feather River Fish Hatchery.
- ADA compliant access for the disabled was provided at the Diversion Dam Overlook.
- The main parking area at Monument Hill of Thermalito Afterbay was graded and paved. The upper parking area was reconfigured and improved.

At Lake Del Valle, construction began on the general renovation of the boat launching facilities. When completed in summer 1999, this project will greatly enhance the boat launch, marina, and parking areas.

Oroville Recreation Plan

On October 1, 1992, the Federal Energy Regulatory Commission issued Order 2100-052, which required the Department to prepare a revised recreation plan for Lake Oroville. This plan replaced the original *Oroville Reservoir, Thermalito Forebay, and Afterbay Recreation Report* (Bulletin 117-6), which was prepared in December 1966. Another new plan, in FERC Order 2100-054, submitted June 1, 1993, and approved September 22, 1994, includes additional recreation facilities and addresses concerns raised by local residents regarding recreation and fishery-related issues.

Recreation plan implementation began in 1995 with establishment of the Lake Oroville Recreation Advisory Committee. This committee of local government, citizens' groups, and State agencies was formed to advise the Department on recreation plan implementation. The following elements are being developed or are already completed.

- Ten floating campsites were constructed and moored at various locations on the lake.
- An en-route RV camping area was added at the North Forebay area.
- Construction began on a duck brood pond and restroom and picnic facilities at Thermalito Afterbay.
- Buoys were deployed around the water-ski slalom course.
- Construction was completed on the 41-mile bike trail main loop.
- Construction of the Lime Saddle Boat Ramp improvements (Department of Boating and Waterways), an equestrian campground at Loafer Creek Recreation area, and lighting on Oroville Dam was completed.
- Fishery and fishing improvements included developing a fish management and stocking plan, stocking chinook salmon, and deploying fish shelters.

Most recreation and fish facilities were completed by 1998; certain elements of the plan may require time extensions to complete.

Fish Plantings

In 1998, the Department of Fish and Game continued its fish-planting activities at 10 SWP facilities. Total plantings of trout and chinook salmon decreased by nearly 3 percent in 1997 (Table 13-2).

At the Feather River Fish Hatchery and the Thermalito Afterbay rearing ponds, 10,410,600 fish were produced in 1998, down 24 percent from 1997. That figure includes 10,329,200 chinook salmon and 81,400 steelhead trout. Of the chinook salmon reared, 5,812,700 were fingerlings, 3,996,600 were advanced fingerlings, 448,800 were subcatchables, and 71,100 were catchables. Of the steelhead reared, all were yearlings.

Recreation Financing

Recreational facilities are financed in accordance with several legislative provisions, specifically, the Davis-Dolwig Act (Water Code Sections 11925 *et seq.*), Assembly Bill 12 (Water Code Sections 11912, 11915, and 11915.1), and the Environmental Water Act, Assembly bills 1441 and 1442 (Water Code Sections 12929 *et seq.*).

The Davis-Dolwig Act declared that providing for the enhancement of fish and wildlife and for recreation in connection with State water projects benefits all the people of California and that the costs attributable to such enhancement should be borne by them. The act also provided a procedure where the State's General Fund would reimburse the Department for those project costs allocated to recreation and fish and wildlife enhancement and for costs of acquiring property for recreation development.

The reimbursements were included in the Department's budget as appropriations from the General Fund and are used by the Department to pay for operations, maintenance, power, and replacement costs associated with operating the SWP for fish and wildlife enhancement and recreation.

Assembly Bill 12 provides for a $5-million annual appropriation from tideland oil and gas revenues to fund joint capital costs of State water projects allocated to recreation, enhancement of fish and wildlife, and purchases of land for recreational uses. Through the 1985-86 fiscal year, the Department received $90 million from tideland oil and gas revenues for this funding.

Assembly Bill 1442, known as the "Offset Legislation," offsets monies owed the California Water Fund by the SWP with reimbursements owed the project by the General Fund under the Davis-Dolwig Act. Monies owed the California Water Fund by the SWP were fully offset in 1998.

Appendix D to Bulletin 132, *Costs of Recreation and Fish and Wildlife Enhancement,* contains specific information about capital costs allocated to fish and wildlife enhancement and recreational enhancement and recreational development. This report to the Legislature is published annually by the Department.

Table 13-2
Fish Planted in 1998
(Thousands)

Location and Size	*Eagle Lake Trout*	*Brook Trout*	*Rainbow Trout*	*Brown Trout*	*Chinook Salmon*	*Total*
Antelope Reservoir						
Subcatchable						
Catchable		9.9	11.9			21.8
Lake Davis						
Trophy			9.2			9.2
Catchables			101.7			101.7
Subcatchable			137.7			137.7
Fingerling			2,168.0			2,168.0
Frenchman Reservoir						
Trophy			3.8			3.8
Catchables	6.5					6.5
Subcatchables	52.6		147.8			200.4
Fingerling	202.5		346.1			548.6
Lake Oroville						
Subcatchable					328.3	328.3
Catchable					24.6	24.6
Fingerling				55.0	106.2	161.2
Thermalito Forebay						
Catchable		10.2	18.4			28.6
Lake Del Valle						
Catchable	6.2		31.8			38.0
Los Banos Reservoir						
Catchable	3.8		16.4			20.2
Pyramid Lake			No Fish Planted			
Castaic Lake						
Catchable			20.6			20.6
Castaic Lake Lagoon						
Catchable			58.9			58.9
Silverwood Lake						
Catchable			37.8			37.8
Lake Perris						
Catchable			60.7			60.7
Lake Skinner [a]						
Catchable			No Fish Planted			
California Aqueduct			No Fish Planted			
Total	**271.6**	**20.1**	**3,170.8**	**55.0**	**459.1**	**3,976.6**

[a] Included in SWP fish planting program but not an SWP facility

Information for this chapter was provided by the Division of Planning and Local Assistance, Central District, the Office of Water Education, and the State Water Project Analysis Office.

Chapter 14
Financial Analysis

One part of the complex process of cost analysis

Significant Events

- On December 1, 1998, the Department sold $207.2 million of Water System Revenue Bonds, Series U. The proceeds were used to provide long-term financing of construction expenditures, pay bond financing costs, and refinance $93.3 million of previously issued bonds.
- On December 1, 1998, the Department sold $20.6 million of Water System Revenue Bonds, Series V. The proceeds along with excess reserves and interest earnings were used to refinance $20.7 million of previously issued bonds and pay for bond financing costs.

This chapter presents both a summary and a detailed explanation of State Water Project current financial analysis, capital costs and requirements, revenues and expenses, and bond activities for years 1999 through 2010.

The Department performs a financial analysis annually to ensure that the SWP financing program will have sufficient funds to meet construction obligations; project operation, maintenance, power, and replacement costs; and bond debt service payments expended for construction. The results of the current financial analysis, dated December 31, 1998, are presented in Tables 14-1 and 14-2 on pages 173 and 174.

Future conditions may change the financial analysis. These contingencies include:

- alterations in schedules of currently planned construction for future facilities;
- changes in economic conditions, including changes in interest rates and in SWP contractor entitlements due to changes in amounts of water needed, conserved, or reclaimed;
- completion of Delta transfer facilities;
- development of additional sources of water not foreseen at this time;
- deviations from the assumptions regarding actual rates of price escalations for future construction from those currently assumed for cost estimates;
- enlargement of the San Luis Canal;
- increases in capital costs related to additional conservation facilities; and
- outcomes of lawsuits now pending before the courts.

Capital Requirements and Financing

In conducting the current analysis, the Department projected that future construction and Davis-Grunsky Act Program costs through the year 2010 will total $404 million. Special capital requirements for revenue bond financing of these construction costs are projected at $42 million for a total capital requirement of $446 million. This projection includes construction and financing costs for the following significant SWP facilities planned for completion by 2010:

- Interim South Delta facilities;
- Gorman Creek Channel modifications on the West Branch of the California Aqueduct; and
- Extension of the East Branch of the California Aqueduct.

Most of these capital requirements will be financed from the projected sale of $300 million of revenue bonds. The remaining $146 million will be financed from current bond proceeds, capital resources revenues, and the transfer of excess revenues not needed for operation costs, debt service, or repayment of the California Water Fund.

The analysis of capital requirements and financing presented in Table 14-1 does not include 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. Also, Table 14-1 does not include costs of associated works that are essential for realizing full benefits from the SWP but are financed and constructed by local interests or State agencies other than the Department. Those facilities include on-shore recreational developments at SWP facilities and local distribution facilities.

The allocation of capital expenditures among various SWP purposes is detailed in Table 14-3.

Table 14-1
Capital Requirements and Financing, December 31, 1998
(Thousands of dollars)

Line Number	Line Item	Calendar year 1952-1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total 1999-2010	Total 1952-2010
	Capital Requirements															
1.	Initial Project Facilities	2,202,316	0	0	0	0	0	0	0	0	0	0	0	0	0	2,202,316
2.	North Bay Aqueduct, Phase II	90,489	24	1	1	1	1	1	0	0	0	0	0	0	29	90,518
3.	Delta and Suisun Marsh Facilities	249,341	7,215	28,311	32,222	14,587	11,092	9,725	906	0	0	0	0	0	104,058	353,399
4.	Final 4 Units at Banks Pumping Plant	43,673	0	0	0	0	0	0	0	0	0	0	0	0	0	43,673
5.	Coastal Branch Aqueduct, Phase II	475,984	15,272	13,890	2,233	0	0	0	0	0	0	0	0	0	31,395	507,379
6.	West Branch Aqueduct	191,869	8,230	6,502	20	0	0	0	0	0	0	0	0	0	14,752	206,621
7.	East Branch Enlargement	441,308	0	0	0	0	0	0	0	0	0	0	0	0	0	441,308
8.	East Branch Improvements	158,245	10,560	4,733	40	0	0	0	0	0	0	0	0	0	15,333	173,578
9.	East Branch Extension	9,497	39,814	47,649	0	0	0	0	0	0	0	0	0	0	87,463	96,960
10.	Power Generation and Transmission Facilities	667,891	3,000	3,000	3,000	3,000	0	0	0	0	0	0	0	0	12,000	679,891
11.	Additional Conservation Facilities	142,767	3,831	4,084	4,475	4,957	4,582	4,158	4,297	4,512	4,737	4,974	5,223	5,483	55,313	198,080
12.	San Joaquin Drainage Facilities	52,039	2,049	2,044	2,146	2,254	2,367	2,485	2,609	2,740	2,877	3,020	3,171	3,330	31,092	83,131
13.	Other Costs	345,881	18,837	18,670	9,915	894	939	888	69	547	75	80	83	88	51,085	396,966
14.	**Total Project Construction Expenditures**	**5,071,300**	**108,832**	**128,884**	**54,052**	**25,693**	**18,981**	**17,257**	**7,881**	**7,799**	**7,689**	**8,074**	**8,477**	**8,901**	**402,520**	**5,473,820**
15.	Davis-Grunsky Act Program Costs	128,666	1,334	0	0	0	0	0	0	0	0	0	0	0	1,334	130,000
16.	Special Capital Requirements Under Revenue Bond Financing	578,356	0	27,912	7,000	0	7,000	0	0	0	0	0	0	0	41,912	620,268
17.	**Total Capital Requirements**	**5,778,322**	**110,166**	**156,796**	**61,052**	**25,693**	**25,981**	**17,257**	**7,881**	**7,799**	**7,689**	**8,074**	**8,477**	**8,901**	**445,766**	**6,224,088**
18.	Power Facilities Capital Requirements	1,248,114	3,000	3,000	3,000	3,000	0	0	0	0	0	0	0	0	12,000	1,260,114
19.	Water Facilities Capital Requirements	4,530,208	107,166	153,796	58,052	22,693	25,981	17,257	7,881	7,799	7,689	8,074	8,477	8,901	433,766	4,963,974
	Capital Financing Sources															
	Power Revenue Bond Proceeds															
20.	Power Revenue Bonds through Series H	1,162,274	0	0	0	0	0	0	0	0	0	0	0	0	0	1,162,274
	Water Revenue Bond Proceeds															
21.	East Branch Enlargement, Current Bonds	485,272	0	0	0	0	0	0	0	0	0	0	0	0	0	485,272
22.	East Branch Extension, Current Bonds	15,585	39,814	4,561	0	0	0	0	0	0	0	0	0	0	44,375	59,960
23.	East Branch Extension, Future Bonds	0	0	50,000	0	0	0	0	0	0	0	0	0	0	50,000	50,000
24.	Water System Facilities, Current Bonds	1,400,059	0	0	0	0	0	0	0	0	0	0	0	0	0	1,400,059
25.	Water System Facilities, Future Bonds	0	0	150,000	50,000	0	40,962	9,038	0	0	0	0	0	0	250,000	250,000
26.	***Subtotal, Water Revenue Bonds***	*1,900,916*	*39,814*	*204,561*	*50,000*	*0*	*40,962*	*9,038*	*0*	*0*	*0*	*0*	*0*	*0*	*344,375*	*2,245,291*
	Other Capital Financing															
27.	Initial Project Facilities Bond Proceeds	1,452,452	0	0	0	0	0	0	0	0	0	0	0	0	0	1,452,452
28.	Davis-Grunsky Act Program Bond Proceeds	128,666	1,334	0	0	0	0	0	0	0	0	0	0	0	1,334	130,000
29.	Application of California Water Fund Monies (Tideland Oil Revenues)	508,056	0	0	0	0	0	0	0	0	0	0	0	0	0	508,056
30.	Interim Financing	(1,160)	61,053	(56,064)	1,452	17,588	(22,869)	0	0	0	0	0	0	0	1,160	0
31.	Application of Capital Resources Revenues to Construction	574,744	1,965	2,299	3,600	3,605	3,388	3,719	3,381	3,299	3,189	3,574	3,977	4,401	40,397	615,141
32.	Revenue Transfers Applied	52,374	6,000	6,000	6,000	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	58,500	110,874
33.	***Subtotal, Other Capital Financing***	*2,715,132*	*70,352*	*(47,765)*	*11,052*	*25,693*	*(14,981)*	*8,219*	*7,881*	*7,799*	*7,689*	*8,074*	*8,477*	*8,901*	*101,391*	*2,816,523*
34.	**Total Financing of Capital Requirements**	**5,778,322**	**110,166**	**156,796**	**61,052**	**25,693**	**25,981**	**17,257**	**7,881**	**7,799**	**7,689**	**8,074**	**8,477**	**8,901**	**445,766**	**6,224,088**

Table 14-2
State Water Project Revenues and Expenditures, December 31, 1998
(Thousands of dollars)

Line Number	Line Item	Calendar year 1952-1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	1999-2010	1952-2010
	Project Revenues															
1.	Capital resources revenues	816,157	3,633	6,938	4,197	5,150	1,884	2,182	1,822	1,821	1,821	1,822	1,821	1,821	34,912	851,069
	Water Contractor Payments															
2.	Transportation capital	2,617,237	131,270	136,826	138,450	139,073	139,031	138,987	138,943	137,801	137,799	137,761	137,760	137,760	1,651,461	4,268,698
3.	Transportation minimum	3,325,260	244,502	268,095	242,619	235,266	219,370	217,155	229,829	224,642	226,920	245,115	245,772	245,468	2,844,753	6,170,013
4.	Transportation variable	1,302,652	100,861	100,608	115,287	99,544	107,135	105,831	86,529	79,987	77,187	80,475	83,654	78,755	1,115,853	2,418,505
5.	Delta Water Charge	1,323,802	96,994	98,701	99,568	99,839	100,163	100,521	100,837	101,130	101,437	101,990	102,326	102,683	1,206,189	2,529,991
6.	East Branch Enlargement payments	274,000	44,292	45,858	45,843	45,570	45,525	44,091	44,069	44,683	44,716	43,803	43,858	43,933	536,241	810,241
7.	East Branch Extension payments	0	3,745	4,803	4,799	4,801	4,801	4,799	4,800	4,800	4,798	4,799	4,800	4,806	56,551	56,551
8.	Coastal Extension Payments	2,286	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	3,556	3,555	3,556	3,555	35,022	37,308
9.	Water Revenue Bond Surcharge	185,020	50,726	55,346	57,739	58,021	57,682	59,562	59,273	58,371	58,177	58,915	59,026	59,116	691,954	876,974
10.	*Subtotal water contractor payments*	*9,030,257*	*674,990*	*712,837*	*706,905*	*684,714*	*676,307*	*673,546*	*666,880*	*654,014*	*654,590*	*676,413*	*680,752*	*676,076*	*8,138,024*	*17,168,281*
11.	Revenue bond cover adjustments	(38,303)	(40,473)	(41,005)	(40,936)	(40,779)	(38,321)	(38,180)	(39,794)	(39,747)	(39,904)	(43,633)	(43,651)	(43,677)	(490,100)	(528,403)
12.	Rate management adjustments	(17,000)	(32,000)	(33,000)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(470,000)	(487,000)
	Other Revenues															
13.	Federal payments for project operating costs	155,114	9,900	10,843	11,138	10,217	10,217	10,217	10,217	10,217	10,217	10,217	10,217	10,217	123,834	278,948
14.	Appropriations for operating costs allocated to recreation	16,657	0	0	0	0	0	0	0	0	0	0	0	0	0	16,657
15.	Davis-Grunsky loan repayments	39,313	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	16,800	56,113
16.	Revenue Bond Proceeds	484,597	0	0	0	0	0	0	0	0	0	0	0	0	0	484,597
17.	Interest Earnings on Operating Revenue	544,839	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	61,200	606,039
18.	Oroville-Thermalito payments	249,279	0	0	0	0	0	0	0	0	0	0	0	0	0	249,279
19.	Miscellaneous revenues	100,711	0	0	0	0	0	0	0	0	0	0	0	0	0	100,711
20.	*Subtotal, other revenues*	*1,590,510*	*16,400*	*17,343*	*17,638*	*16,717*	*16,717*	*16,717*	*16,717*	*16,717*	*16,717*	*16,717*	*16,717*	*16,717*	*201,834*	*1,792,344*
21.	Total operating revenues	**10,565,464**	**618,917**	**656,175**	**643,107**	**620,152**	**614,203**	**611,583**	**603,303**	**590,484**	**590,903**	**608,997**	**613,318**	**608,616**	**7,379,758**	**17,945,222**
22.	Total operating revenues and Capital Resources Revenues	**11,381,621**	**622,550**	**663,113**	**647,304**	**625,302**	**616,087**	**613,765**	**605,125**	**592,305**	**592,724**	**610,819**	**615,139**	**610,437**	**7,414,670**	**18,796,291**
	Project Expenses															
23.	Project operations, maintenance, and power costs	4,341,669	346,916	356,529	366,681	345,299	345,575	343,997	329,687	308,497	313,745	314,404	318,334	312,390	4,002,054	8,343,723
24.	Deposits to Replacement Reserves	97,208	0	0	0	0	0	0	0	0	0	0	0	0	0	97,208
25.	Deposits to special reserves	433,150	(275)	26,394	(2,953)	(7,073)	(3,856)	(7,609)	(8,204)	1,161	(3,670)	(996)	(721)	1,128	(6,674)	426,476
26.	Capital resources expenditures	612,068	3,633	6,938	4,197	5,150	1,884	2,182	1,822	1,821	1,821	1,822	1,821	1,821	34,912	646,980
	Payments of Debt Service															
27.	Principal repayments on bonds sold through December 31, 1998 (current bonds)	1,295,130	85,905	91,190	94,944	98,940	94,240	98,894	110,130	114,860	120,600	141,520	148,915	155,900	1,356,038	2,651,168
28.	Interest on bonds sold through December 31, 1998 (current bonds)	4,252,236	180,371	176,062	171,415	166,171	161,055	156,111	151,050	145,324	139,588	133,430	126,152	118,561	1,825,290	6,077,526
29.	Future Water Bond principal repayments	0	0	0	0	1,275	1,725	1,830	2,390	2,535	2,685	2,845	3,015	3,195	21,495	21,495
30.	Future Water Bond interest payments	0	0	0	8,520	11,040	10,964	13,860	13,750	13,607	13,455	13,294	13,123	12,942	124,555	124,555
31.	**Total Principal**	**1,295,130**	**85,905**	**91,190**	**94,944**	**100,215**	**95,965**	**100,724**	**112,520**	**117,395**	**123,285**	**144,365**	**151,930**	**159,095**	**1,377,533**	**2,672,663**
32.	**Total Interest**	**4,252,236**	**180,371**	**176,062**	**179,935**	**177,211**	**172,019**	**169,971**	**164,800**	**158,931**	**153,043**	**146,724**	**139,275**	**131,503**	**1,949,845**	**6,202,081**
33.	*Subtotal Debt Service*	*5,547,366*	*266,276*	*267,252*	*274,879*	*277,426*	*267,984*	*270,695*	*277,320*	*276,326*	*276,328*	*291,089*	*291,205*	*290,598*	*3,327,378*	*8,874,744*
34.	**Total Operating Expenses and Debt Service**	**11,031,461**	**616,550**	**657,113**	**642,804**	**620,802**	**611,587**	**609,265**	**600,625**	**587,805**	**588,224**	**606,319**	**610,639**	**605,937**	**7,357,670**	**18,389,131**
35.	Net System Revenues	350,160	6,000	6,000	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	57,000	407,160
	Application of Net System Revenues															
36.	California Water Fund Repayment	297,970	0	0	0	0	0	0	0	0	0	0	0	0	0	297,970
37.	Revenues used for capital expenditures	52,190	6,000	6,000	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	57,000	109,190

Table 14-3
Allocation of Capital Expenditures
(Thousands of Dollars)

Facilities and Construction Divisions	*Expenditures Incurred Through 1998*	*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 Division	17,926	3	17,929	1,374	0	16,555	0
Oroville Division	567,334	2,309	569,643	478,280	70,661	20,702	0
Delta Facilities Division	403,403	98,689	502,092	454,206	0	47,886	0
North Bay Aqueduct	94,195	43	94,238	94,238	0	0	0
South Bay Aqueduct	80,545	711	81,256	59,583	7,532	14,141	0
California Aqueduct:							
North San Joaquin Division	263,128	8,127	271,255	261,966	0	9,289	0
San Luis Division	259,875	33,235	293,110	278,937	0	14,173	0
South San Joaquin Division	306,761	2,260	309,021	292,313	0	16,708	0
Tehachapi Division	325,294	2,014	327,308	308,980	0	18,328	0
Mojave Division	352,000	11,887	363,887	325,941	0	37,946	0
Santa Ana Division	262,582	3,568	266,150	234,118	0	32,032	0
West Branch	535,320	14,762	550,082	516,136	0	33,946	0
Coastal Branch	475,315	31,556	506,871	506,871	0	0	0
Subtotal, California Aqueduct	*2,780,275*	*107,409*	*2,887,684*	*2,725,262*	*0*	*162,422*	*0*
Other Project Facilities							
Small Hydroelectric Power Generating Facilities	90,164	0	90,164	90,164	0	0	0
Off-Aqueduct Power Generating Facilities	445,786	9,000	454,786	454,786	0	0	0
East Branch Enlargement	441,307	0	441,307	441,307	0	0	0
East Branch Extension	9,498	87,463	96,961	96,961	0	0	0
Coastal Branch Extension	26,361	0	26,361	26,361			
San Joaquin Drainage Facilities	58,554	39,284	97,838		0	0	97,838
Planning and Preoperations	55,647	55,312	110,959	110,959	0	0	0
Unassigned	305	2,297	2,602				2,602
Subtotal, Project Construction Expenditures	*5,071,300*	*402,520*	*5,473,820*	*5,033,481*	*78,193*	*261,706*	*100,440*
Other Capital Expenditures							
Davis-Grunsky Act Program	128,666	1,334	130,000	0	0	0	130,000
Total Capital Expenditures	**5,199,966**	**403,854**	**5,603,820**	**5,033,481**	**78,193**	**261,706**	**230,440**

[a] Reflects the Department's allocation to this purpose, irrespective of federal payments.

[b] Includes costs currently unassigned to purpose, planning costs of deleted features of project facilities, initial costs of inventoried items, joint costs assigned to the federal government, and costs assigned to the Davis-Grunsky Act Program.

Capital Requirements

Lines 1 through 19 in Table 14-1 show actual and projected SWP capital requirements through 2010. Estimates of future capital expenditures include allowances for cost escalation from 1999 through 2010 at 3 percent per year for construction costs and 4 percent per year for right-of-way costs. Capital expenditures for the SWP also include requirements other than those for construction, such as disbursements made as part of the Davis-Grunsky Act Program (Line 15) and special capital requirements under revenue bond financing (Line 16). The Department will decide to construct facilities only after examining alternatives and completing environmental documentation and other review processes.

Line 1, Initial Project Facilities, includes only those facilities completed before 1974 (see Bulletin 132-74, Chapter 2). Additional costs after 1973 and estimated costs of remaining work on the initial SWP facilities are not included.

Line 2, North Bay Aqueduct, Phase II, consists of pipelines, pumping plants, and a small reservoir necessary to divert water from the western Delta to Napa and Solano counties for urban use. Phase II is connected with the Phase I facilities and was completed in 1968 (Phase I costs are included in the initial project facilities discussed in Line 1). Phase II became operational in May 1988.

Line 3, Delta and Suisun Marsh Facilities, shows historical costs in Column 1 that include 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 four permanent barriers in the Delta and an additional intake at Clifton Court Forebay.

Line 4, Final Four Units at Banks Pumping Plant, includes costs of the final four 1,067-cfs units, which became operational in spring 1992, and final payments for plant equipment.

Line 5, Coastal Branch Aqueduct, Phase II, includes all costs for the planning, design, and construction of Phase II of the Coastal Branch of the California Aqueduct. Phase II construction began in October 1993 and was completed in 1997. Water deliveries from Phase II facilities began in July 1997. Future costs in this line are the estimated costs for settlement of outstanding construction claims.

Line 6, West Branch Aqueduct, shows costs for all facilities on the West Branch except Warne Powerplant. Warne Powerplant costs are included in Line 10. Projected costs include approximately $9.4 million for Gorman Creek channel modifications.

Line 7, East Branch Enlargement, includes expenditures for first-stage construction of the East Branch Enlargement, including the enlargement share of powerplant costs at Mojave Siphon and Devil Canyon. (The remaining powerplant costs are included in Line 10.) Estimated East Branch Enlargement costs by facility are presented in Table 14-4. Costs for Alamo Powerplant consist of expenditures for Unit 1 facilities allocated to enlargement. Construction of Unit 2 has been deferred.

Table 14-4
Estimated Capital Costs for East Branch Enlargement

Facility	*Dollar Amounts (in millions)*
Aqueduct and siphons	112.5
Pearblossom Pumping Plant	70.1
Alamo Powerplant	5.0
Mojave Siphon Powerplant	49.6
Devil Canyon Powerplant and Second Afterbay	204.1
Total	**441.3**

All costs in Line 7 are allocated to and repaid by the seven Southern California contractors participating in the East Branch Enlargement.

Line 8, East Branch Improvements, shows all aqueduct costs on the East Branch not allocated to the enlargement project. Those costs include improvements constructed concurrently with the enlargement work and the reconstruction of the San Bernardino Tunnel Intake. Costs for powerplant construction at

Alamo, Mojave Siphon, and Devil Canyon are not included in this line.

Line 9, East Branch Extension, shows projected expenditures for Phase I of the proposed extension of the East Branch of the California Aqueduct. The East Branch Extension will extend the California Aqueduct east from the Devil Canyon Powerplant to a terminus at Noble Creek near Beaumont in Riverside County. The extension will provide water service to the San Gorgonio Pass Water Agency and the San Bernardino Valley Municipal Water District. All costs in Line 9 will be allocated to and repaid by the two participating contractors.

Line 10, Power Generation and Transmission Facilities, does not include the East Branch Enlargement share of costs for Alamo, Mojave Siphon, and Devil Canyon powerplants shown in Line 7 of Table 14-1. Estimated capital costs for facilities included in Line 10 are shown in Table 14-5.

Table 14-5
Estimated Capital Costs for Power Generation and Transmission Facilities

Facility	*Dollar Amounts (in millions)*
Powerplants	
Reid Gardner, Unit 4	280.3
Bottle Rock	120.9
South Geysers	49.6
Devil Canyon	36.8
Warne	84.5
Alamo	44.9
Mojave Siphon	31.2
Thermalito Diversion Dam	14.1
Subtotal	*662.3*
Transmission Lines	
Midway-Wheeler Ridge	10.7
Geysers-Lakeville	6.9
Total	**679.9**

Line 11, Additional Conservation Facilities, shows projected costs to plan and study additional conservation facilities. Specific planning activities and projected spending amounts for 1999 through 2010 are shown in Table 14-6. Expenditures for these items are being reviewed. Construction costs of additional conservation facilities are not included in the financial analysis.

Table 14-6
Estimated Future Costs for Planning Additional Conservation Facilities

Activity	*Project Expenditures (in millions)*
Future Water Supply	45.1
Other Planning Costs	10.2
Total	**55.3**

Line 11 does not include CALFED program costs. CALFED expenditures for preliminary planning and environmental impact report preparation are currently financed by appropriations from the General Fund. The Department assumes that future costs of the CALFED program will be financed from the General Fund.

Line 12, San Joaquin Drainage Facilities, includes projected costs of the San Joaquin Valley Drainage Monitoring Program. The activities in this program are monitoring, evaluating, reducing, and treating drainage, and investigating evaporation ponds.

The Department assumes that future costs of the drainage program will be financed by revenue transfers (Line 31).

Line 13, Other Costs, includes 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.

Line 14, Total Project Construction Expenditures, is the total of Lines 1 through 13.

Line 15, Davis-Grunsky Act Program Costs, shows costs of the Davis-Grunsky Act Program, a financial assistance program to provide grants and loans to public agencies for constructing local water projects.

As of December 31, 1998, the Department had disbursed $129 million (including $8.5 million for administration) in grants and loans for local agencies throughout the State. Funds for Department projects currently authorized will be disbursed before 2000.

Table 14-10
Operations, Maintenance, Power, and Replacement Costs, by Facility, Composition, and Purpose
(Thousands of dollars)

Feature	Calendar year														Total
	1962-1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011-2035*	
Project Facility															
Feather River facilities	133,829	7,831	8,455	5,960	4,680	4,693	3,970	3,962	3,947	3,950	3,950	3,952	3,946	102,592	295,717
North Bay Aqueduct	19,060	2,681	2,565	2,460	2,624	2,636	2,608	2,547	2,525	2,518	2,529	2,541	2,527	68,472	118,293
Delta facilities	389	0	0	0	0	0	0	0	0	0	0	0	0	0	389
Suisun Marsh	18,112	3,260	2,127	2,918	2,996	2,996	2,986	2,986	2,986	2,986	2,986	2,986	2,986	60,348	113,659
South Bay Aqueduct	133,445	10,496	10,058	10,591	10,280	10,327	10,150	9,841	9,720	9,665	9,697	9,730	9,643	256,513	510,156
California Aqueduct															
Delta to Edmonston	1,729,697	137,514	151,176	155,990	143,908	143,033	148,682	140,770	133,647	138,366	137,887	139,479	137,060	4,057,594	7,494,803
Edmonston to Perris	1,413,257	101,830	106,510	108,822	101,173	103,163	108,652	101,420	94,512	95,098	96,396	98,936	96,390	3,205,214	5,831,373
West Branch	24,848	8,071	(961)	(565)	(1,026)	(2,090)	(11,366)	(10,964)	(13,531)	(13,811)	(14,056)	(14,351)	(15,077)	(441,567)	(506,446)
Coastal Branch	72,608	10,484	10,488	9,797	9,911	9,926	9,705	9,256	9,071	8,971	9,013	9,059	8,942	243,938	431,169
Off-Aqueduct power generating facilities	729,274	51,319	49,931	51,964	51,663	51,614	51,564	51,564	51,563	51,563	51,563	51,563	51,534	133,474	1,480,153
Recreation, planning, and CVP negotiations	0	0	0	541	590	590	590	590	590	590	590	590	590	14,763	20,614
Water quality monitoring	203,965	16,069	18,656	20,515	20,653	20,689	18,307	17,439	13,191	13,573	13,573	13,573	13,573	262,321	666,097
Davis-Grunsky Act Program	5,211	244	256	269	276	276	276	276	276	276	276	276	276	6,883	15,347
Subtotal	*4,483,695*	*349,799*	*359,261*	*369,262*	*347,728*	*347,853*	*346,124*	*329,687*	*308,497*	*313,745*	*314,404*	*318,334*	*312,390*	*7,970,545*	*16,471,324*
Payments to\credits from PG&E under Comprehensive Agreement	(44,818)	(2,883)	(2,732)	(2,581)	(2,429)	(2,278)	(2,127)	0	0	0	0	0	0	0	(59,848)
Total OMP&R Costs	**4,438,877**	**346,916**	**356,529**	**366,681**	**345,299**	**345,575**	**343,997**	**329,687**	**308,497**	**313,745**	**314,404**	**318,334**	**312,390**	**7,970,545**	**16,411,476**
Composition															
Salaries and expenses of headquarters personnel	970,226	79,608	85,688	91,095	92,702	92,702	86,026	85,158	80,527	80,527	80,528	80,527	80,528	1,988,959	3,974,801
Salaries and expenses of field personnel	1,754,888	123,344	118,793	106,223	102,267	102,300	102,336	102,336	102,721	103,097	103,096	103,098	103,097	2,525,913	5,553,509
Pumping power															
Used by pumping plants	1,912,055	183,654	202,465	212,308	191,219	196,141	206,042	195,106	175,424	183,223	185,112	190,563	185,445	6,228,942	10,447,699
Produced by generation plants	(869,145)	(88,389)	(97,892)	(92,604)	(90,399)	(95,180)	(100,120)	(104,753)	(102,014)	(104,941)	(106,171)	(107,693)	(108,490)	(2,913,643)	(4,981,434)
Payments to/credits from PG&E under Comprehensive Agreement	(44,818)	(2,883)	(2,732)	(2,581)	(2,429)	(2,278)	(2,127)	0	0	0	0	0	0	0	(59,848)
Off-Aqueduct power generating facilities requirement	729,274	51,319	49,931	51,964	51,663	51,614	51,564	51,564	51,563	51,563	51,563	51,563	51,534	133,474	1,480,153
Oroville-Thermalito insurance premiums	10,240	263	276	276	276	276	276	276	276	276	276	276	276	6,900	20,439
Less: Portion of costs incurred during construction	(121,051)	0	0	0	0	0	0	0	0	0	0	0	0	0	(121,051)
Subtotal	*4,341,669*	*346,916*	*356,529*	*366,681*	*345,299*	*345,575*	*343,997*	*329,687*	*308,497*	*313,745*	*314,404*	*318,334*	*312,390*	*7,970,545*	*16,314,268*
Deposits to replacement reserves	97,208	0	0	0	0	0	0	0	0	0	0	0	0	0	97,208
Total OMP&R Costs	**4,438,877**	**346,916**	**356,529**	**366,681**	**345,299**	**345,575**	**343,997**	**329,687**	**308,497**	**313,745**	**314,404**	**318,334**	**312,390**	**7,970,545**	**16,411,476**
Project Purpose															
Water supply and power generation	4,263,466	329,967	337,943	347,640	327,200	327,529	326,058	309,648	289,430	294,368	295,104	299,005	293,112	7,495,188	15,535,658
Payments to/credits from PG&E under Comprehensive Agreement	(44,818)	(2,883)	(2,732)	(2,581)	(2,429)	(2,278)	(2,127)	0	0	0	0	0	0	0	(59,848)
Recreation and fish and wildlife enhancement	83,111	8,536	9,074	9,597	9,500	9,295	9,037	9,010	8,040	8,350	8,272	8,301	8,251	199,324	387,698
Flood control	2,686	226	262	276	280	281	281	281	279	279	280	280	279	7,091	13,061
Miscellaneous purposes															
Federal share, San Luis, and Delta facilities	129,321	9,900	10,843	11,138	10,217	10,217	10,217	10,217	10,217	10,217	10,217	10,217	10,217	255,663	508,818
Other (Davis-Grunsky, drainage, City of Los Angeles)	5,111	1,170	1,139	611	531	531	531	531	531	531	531	531	531	13,279	26,089
Total OMP&R Costs	**4,438,877**	**346,916**	**356,529**	**366,681**	**345,299**	**345,575**	**343,997**	**329,687**	**308,497**	**313,745**	**314,404**	**318,334**	**312,390**	**7,970,545**	**16,411,476**

Table 14-11
Annual Debt Service on Bonds Sold through December 31, 1998
(Thousands of dollars)

Calendar	Series A through Y Water Bonds		Oroville Revenue Bonds [a]		Pyramid Project Revenue Bonds [b]		Small Hydro Project Revenue Bonds [b]		Alamo Project Revenue Bonds [b]		Water System Facilities Water System Revenue Bonds		Subtotal		Devil Canyon-Castaic Project Revenue Bonds		Reid Gardner Project Revenue Bonds [b]		South Geysers Project Revenue Bonds [b]		Bottle Rock Project Revenue Bonds, [b]		East Branch Enlargement Project Water System Revenue Bonds,		Coastal Extension Facilities Water System Revenue Bonds,		East Branch Extension Facilities Water System Revenue Bonds,		Grand Total	
Year	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest
1964	0	3,333	0	0	0	0	0	0	0	0	0	0	0	3,333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,333
1965	0	11,114	0	0	0	0	0	0	0	0	0	0	0	11,114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,114
1966	0	18,764	0	0	0	0	0	0	0	0	0	0	0	18,764	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,764
1967	0	26,911	0	0	0	0	0	0	0	0	0	0	0	26,911	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26,911
1968	0	37,761	0	3,876	0	0	0	0	0	0	0	0	0	41,637	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41,637
1969	0	47,460	0	10,448	0	0	0	0	0	0	0	0	0	57,908	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57,908
1970	0	53,290	0	13,145	0	0	0	0	0	0	0	0	0	66,435	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66,435
1971	0	63,035	0	13,145	0	0	0	0	0	0	0	0	0	76,180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76,180
1972	0	69,149	1,260	13,112	0	0	0	0	0	0	0	0	1,260	82,261	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,260	82,261
1973	1,200	69,347	1,330	13,042	0	0	0	0	0	0	0	0	2,530	82,389	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	2,530	90,097
1974	3,000	69,533	1,400	12,969	0	0	0	0	0	0	0	0	4,400	82,502	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	4,400	90,210
1975	5,000	69,366	1,475	12,893	0	0	0	0	0	0	0	0	6,475	82,259	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	6,475	89,967
1976	7,000	69,657	1,555	12,811	0	0	0	0	0	0	0	0	8,555	82,468	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	8,555	90,176
1977	10,200	69,298	1,635	12,727	0	0	0	0	0	0	0	0	11,835	82,025	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	11,835	89,733
1978	12,700	69,286	5,775	12,537	0	0	0	0	0	0	0	0	18,475	81,823	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	18,475	89,531
1979	13,650	68,660	11,585	12,275	0	0	0	0	0	0	0	0	25,235	80,935	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	25,235	88,643
1980	16,050	67,941	3,265	11,739	0	7,900	0	0	0	0	0	0	19,315	87,580	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	19,315	95,288
1981	18,050	67,078	4,885	11,444	0	7,292	0	0	0	0	0	0	22,935	85,814	0	7,708	0	5,312	0	0	0	0	0	0	0	0	0	0	22,935	98,834
1982	19,250	66,130	17,920	10,968	0	7,292	0	0	0	0	0	0	37,170	84,390	0	7,708	0	14,347	0	0	0	0	0	0	0	0	0	0	37,170	106,445
1983	20,520	65,111	21,110	10,147	0	7,292	0	3,727	0	2,449	0	0	41,630	88,726	900	7,708	0	35,719	0	4,777	0	6,017	0	0	0	0	0	0	42,530	142,947
1984	21,785	64,036	10,005	9,013	640	7,292	0	3,727	0	4,198	0	0	32,430	88,266	955	7,647	0	35,719	0	5,647	0	10,315	0	0	0	0	0	0	33,385	147,594
1985	22,555	62,892	12,700	8,628	675	7,238	0	3,727	0	4,198	0	0	35,930	86,683	1,010	7,583	9,425	27,209	0	5,647	0	10,315	0	0	0	0	0	0	46,365	137,437
1986	23,830	61,705	11,435	7,859	715	7,377	0	3,537	0	4,263	0	0	35,980	84,741	1,070	7,515	3,805	32,882	0	5,516	1,240	10,315	0	4,021	0	0	0	0	42,095	144,990
1987	25,495	60,452	11,715	7,188	790	7,513	0	3,348	265	4,329	0	4,952	38,265	87,782	1,135	7,442	4,860	32,605	0	5,386	1,305	10,253	0	9,651	0	0	0	0	45,565	153,119
1988	26,770	59,120	6,685	6,664	830	7,447	345	3,348	280	4,314	710	11,037	35,620	91,930	1,205	7,366	5,065	32,295	580	5,521	1,390	10,849	995	9,875	0	0	0	0	44,855	157,836
1989	28,145	57,790	33,705	5,513	875	7,378	365	3,328	295	4,298	1,148	14,373	64,533	92,680	1,275	7,284	7,820	27,557	709	5,646	1,565	11,592	1,078	10,104	0	0	0	0	76,980	154,863
1990	29,385	56,436	10,385	4,301	930	7,305	405	3,304	320	4,279	1,227	19,555	42,652	95,180	1,355	7,198	6,675	29,781	761	5,596	1,678	11,491	1,134	10,048	0	0	0	0	54,255	159,294
1991	30,365	55,034	12,055	3,922	980	7,227	430	3,276	335	4,257	2,129	27,569	46,294	101,285	1,435	7,107	7,170	29,302	818	5,535	1,791	11,376	1,197	16,856	0	0	0	0	58,705	171,461
1992	31,745	54,193	14,135	2,985	2,395	5,308	960	2,553	1,260	3,086	5,108	28,411	55,603	96,536	1,520	7,010	8,950	27,188	1,934	4,136	4,575	7,942	2,583	22,241	0	0	0	0	75,165	165,053
1993	33,390	52,670	13,755	2,237	1,525	5,688	445	2,640	755	3,300	4,577	29,965	54,447	96,500	1,610	6,907	8,820	26,953	901	4,256	3,264	8,385	3,039	21,428	0	0	0	0	72,081	164,429
1994	35,075	51,231	35,225	934	1,580	5,634	695	2,569	780	3,274	5,910	38,223	79,265	101,865	1,705	6,799	78,457	26,273	1,588	4,072	3,374	8,270	4,567	20,752	0	0	0	0	168,956	168,031
1995	36,280	49,703	0	0	1,635	5,570	745	2,536	805	3,242	8,064	37,879	47,529	98,930	1,810	6,684	5,420	19,230	1,695	4,005	3,521	8,133	4,979	20,499	0	0	0	0	64,954	157,481
1996	37,520	48,024	0	0	2,320	5,486	3,135	2,464	1,055	3,203	10,459	58,170	54,489	117,347	1,920	6,561	49,465	18,130	3,043	3,909	3,682	7,974	4,771	23,240	0	0	0	0	117,370	177,161
1997	37,215	46,365	0	0	1,695	5,274	585	2,283	875	3,073	14,375	67,910	54,745	124,905	2,035	6,432	7,515	15,255	1,825	3,696	3,861	7,741	6,300	23,708	0	1,981	0	76	76,281	183,794
1998	37,295	44,736	0	0	1,770	5,237	625	2,258	910	3,059	16,754	68,585	57,354	123,875	2,155	6,295	5,045	16,144	1,935	3,637	4,030	7,509	6,760	23,966	0	1,829	0	229	77,279	183,484
1999	38,220	43,132	0	0	1,845	5,141	680	2,229	960	3,005	18,701	68,085	60,406	121,592	2,285	6,160	9,310	11,660	2,081	3,548	4,240	7,319	7,518	25,033	0	1,808	65	2,931	85,905	180,051
2000	39,510	41,469	0	0	1,925	5,045	610	2,197	1,010	2,955	19,536	66,902	62,591	118,568	2,420	6,040	9,870	11,195	1,950	3,448	4,470	7,097	8,974	24,652	0	1,808	915	2,927	91,190	175,735
2001	40,600	39,751	0	0	2,025	4,941	640	2,164	1,065	2,899	20,544	65,638	64,874	115,393	2,565	5,912	10,365	10,699	2,045	3,342	4,720	6,856	9,425	24,189	0	1,808	950	2,889	94,944	171,088
2002	41,740	37,984	0	0	2,115	4,831	680	2,129	1,125	2,842	21,619	64,131	67,279	111,917	2,720	5,773	10,890	10,181	2,160	3,230	4,990	6,597	9,911	23,485	0	1,808	990	2,851	98,940	165,842
2003	43,590	36,159	0	0	2,215	4,711	705	2,091	1,190	2,779	22,760	62,724	70,460	108,464	2,885	5,626	1,885	9,633	2,290	3,109	5,285	6,317	10,405	22,955	0	1,808	1,030	2,811	94,240	160,723
2004	45,730	34,244	0	0	2,330	4,585	795	2,051	1,260	2,710	24,802	61,226	74,917	104,816	3,055	5,470	1,990	9,535	2,425	2,978	5,610	6,016	9,827	22,386	0	1,808	1,070	2,769	98,894	155,778
2005	46,985	32,242	0	0	2,530	4,450	1,135	2,005	1,375	2,638	26,079	59,722	78,104	101,057	3,240	5,305	8,600	9,431	2,750	2,838	5,950	5,691	10,336	21,859	0	1,808	1,115	2,725	110,095	150,714
2006	48,275	30,186	0	0	2,680	4,302	1,180	1,938	1,450	2,557	26,946	58,136	80,531	97,119	3,435	5,130	9,105	8,937	2,920	2,675	6,325	5,339	11,384	21,302	0	1,808	1,160	2,680	114,860	144,990
2007	49,765	28,060	0	0	2,830	4,140	1,250	1,867	1,540	2,469	28,184	56,745	83,569	93,281	3,640	4,945	9,595	8,406	3,100	2,500	6,730	4,960	11,996	20,717	765	1,808	1,205	2,633	120,600	139,250
2008	51,755	25,871	0	0	3,070	3,970	1,265	1,792	1,645	2,377	30,330	55,208	88,065	89,218	3,860	4,749	25,055	7,840	3,315	2,314	7,245	4,557	11,905	20,077	810	1,762	1,265	2,574	141,520	133,091
2009	54,095	23,583	0	0	3,250	3,783	1,280	1,714	1,775	2,279	32,022	53,607	92,422	84,966	4,090	4,540	26,420	6,411	3,505	2,112	7,700	4,117	12,588	19,438	860	1,713	1,330	2,510	148,915	125,807
2010	55,785	21,206	0	0	3,440	3,587	1,270	1,636	1,930	2,171	33,810	51,890	96,235	80,490	4,335	4,319	27,800	4,989	3,725	1,898	8,170	3,651	13,325	18,761	910	1,662	1,400	2,445	155,900	118,215
2011	57,275	18,749	0	0	3,505	3,376	1,270	1,558	1,980	2,055	35,700	50,093	99,730	75,831	4,595	4,085	29,345	3,494	3,960	1,671	8,675	3,155	14,210	18,035	965	1,607	1,455	2,384	162,935	110,262
2012	58,615	16,199	0	0	3,720	3,130	1,285	1,469	2,135	1,917	37,730	48,146	103,485	70,861	4,875	3,837	31,205	1,823	4,235	1,395	9,335	2,549	15,035	17,259	1,015	1,558	1,530	2,310	170,715	101,592
2013	60,455	13,650	0	0	3,795	2,870	1,850	1,379	2,410	1,766	39,542	46,075	108,052	65,740	5,165	3,574	305	16	4,610	1,097	10,385	1,894	15,873	16,436	1,065	1,506	1,720	2,231	147,175	92,494
2014	57,985	11,222	0	0	5,075	2,648	1,920	1,266	3,585	1,634	43,363	43,967	111,928	60,737	5,475	3,303	0	0	4,325	821	8,700	1,294	16,302	15,558	1,120	1,451	1,805	2,143	149,655	85,307
2015	53,775	8,806	0	0	4,635	2,363	1,990	1,151	3,055	1,438	44,644	41,670	108,099	55,428	5,805	3,015	0	0	4,015	572	1,305	785	17,576	14,658	1,180	1,392	1,890	2,057	139,870	77,907
2016	46,215	6,588	0	0	4,665	2,099	2,165	1,032	2,930	1,267	46,879	39,298	102,854	50,284	6,150	2,710	0	0	1,955	339	1,240	718	18,576	13,692	1,240	1,330	1,990	1,961	134,005	71,034
2017	38,145	4,652	0	0	4,750	1,834	2,275	902	2,760	1,104	49,172	36,825	97,097	45,317	6,520	2,388	0	0	685	227	1,220	651	19,823	12,673	1,305	1,265	2,085	1,859	128,735	64,380
2018	25,435	3,011	0	0	4,995	1,562	2,395	765	2,940	950	51,832	34,222	87,597	40,510	6,910	2,045	0	0	725	192	1,295	588	20,968	11,580	1,375	1,197	2,195	1,752	121,065	57,864
2019	16,975	1,804	0	0	5,265	1,274	2,505	621	3,130	785	54,781	31,463	82,656	35,947	7,325	1,682	0	0	765	156	1,370	520	22,089	10,424	1,450	1,123	2,310	1,640	117,965	51,492
2020	17,405	956	0	0	5,540	973	2,630	471	3,340	611	57,786	28,571	86,706	31,582	7,765	1,298	0	0	810	117	1,460	447	23,369	9,204	1,525	1,045	2,420	1,525	124,055	45,218
2021	8,595	318	0	0	6,070	656	2,750	313	4,050	424	67,438	25,545	82,363	27,256	8,230	890	0	0	215	75	1,070	369	25,137	7,954	1,610	963	2,545	1,403	121,170	38,910
2022	1,885	60	0	0	6,145	323	2,945	162	4,030	203	58,266	22,023	79,811	22,771	8,725	458	0	0	230	63	1,130	312	26,639	6,609	1,695	876	2,670	1,277	120,900	32,366
2023	85	7	0	0	0	0	0	0	0	0	72,195	18,989	72,280	18,996	0	0	0	0	420	50	2,080	248	22,475	5,175	1,785	785	2,805	1,142	101,845	26,396
2024	35	3	0	0	0	0	0	0	0	0	69,671	15,180	69,706	15,183	0	0	0	0	445	26	2,200	127	23,795	3,977	1,880	689	2,950	1,003	100,976	21,005
2025	0	0	0	0	0	0	0	0	0	0	55,023	11,469	55,023	11,469	0	0	0	0	0	0	0	0	19,906	2,655	1,985	588	3,095	855	80,009	15,567
2026	0	0	0	0	0	0	0	0	0	0	49,212	8,636	49,212	8,636	0	0	0	0	0	0	0	0	9,787	1,565	2,090	481	3,250	700	64,339	11,382
2027	0	0	0	0	0	0	0	0	0	0	47,113	6,165	47,113	6,165	0	0	0	0	0	0	0	0	7,732	1,072	2,200	369	3,410	538	60,455	8,144
2028	0	0	0	0	0	0	0	0	0	0	37,839	3,817	37,839	3,817	0	0	0	0	0	0	0	0	6,881	693	2,440	251	3,580	367	50,740	5,128
2029	0	0	0	0	0	0	0	0	0	0	39,791	1,945	39,791	1,945	0	0	0	0	0	0	0	0	7,254	355	2,580	129	3,760	189	53,385	2,618
Total	**1,582,400**	**2,386,523**	**244,995**	**246,522**	**107,770**	**203,344**	**46,205**	**83,527**	**60,605**	**104,657**	**1,333,771**	**1,644,742**	**3,375,746**	**4,669,315**	**139,165**	**283,872**	**420,232**	**566,151**	**75,450**	**117,775**	**158,176**	**230,651**	**498,424**	**650,817**	**33,850**	**43,824**	**59,960**	**60,386**	**4,761,003**	**6,622,791**

[a] Principal and interest schedule adjusted to reflect early redemption of bonds.

[b] Allocated portions of Power Facilities Revenue Bonds and Water System Revenue Bonds.

Line 16, Special Capital Requirements under Revenue Bond Financing, presents special capital requirements at the time revenue bonds are sold. The financial analysis assumes 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 presented in Table 14-7.

Line 17, Total Capital Requirements, is the total of Lines 14, 15, and 16.

Line 18, Power Facilities Capital Requirements, shows the total capital requirements for power facilities included in Line 17.

Line 19, Water Facilities Capital Requirements, shows the total capital requirements for water facilities included in Line 17.

Capital Financing

The SWP was constructed with three general types of financing: Burns-Porter, revenue bonds, and capital resources. Lines 20 through 33 of Table 14-1 present specific information about those sources of financing.

Burns-Porter Act. Burns-Porter financing is derived from the sale of California Water Resources Development Bonds (general obligation bonds) and State Tideland Oil Revenues deposited in the California Water Fund as authorized by the Burns-Porter Act (Water Code sections 12930-12944), approved by 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 have 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 30 percent of the expenditures through 1998 for construction and the Davis-Grunsky Act Program were financed with general obligation bonds.

Monies deposited in the California Water Fund were appropriated for purposes outlined in the Burns-Porter Act. Such deposits were derived from a portion of the State 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. In 1998, the Department completed repayments on the California Water Fund, which totaled $298 million (see Table 14-2, Line 36).

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 funding the Debt Service Reserve Account, paying interest on bonds, and paying water system operating expenses during a specified period.

As of December 31, 1998, the Department had sold $5.4 billion of revenue bonds. That amount includes $2.2 billion of refunded bonds, leaving a total principal obligation of $3.2 billion. Two bond issues were sold in 1998: $207.2 million of Water System Revenue Bonds, Series U, sold December 1, 1998, and $20.6 million of Water System Revenue Bonds, Series V, sold December 1, 1998. 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.

Table 14-7
Application of Revenue Bond Proceeds

Bond Series [a]	*Construction Expenditures*	*Other Capital Requirements*					*Total Principal Amount of Bonds*
		Reim-bursement of General Fund	*Capitalized Interest*	*Capitalized Operating Costs*	*Bond Financing and Refunding Costs* [b]	*Subtotal*	
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	237.9	239.5
Power Facilities Series H	22.2	0.0	0.0	0.0	184.5	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	8.4	9.0
Water System Facilities Series D	95.9	0.0	2.9	0.0	1.2	4.1	100.0
Water System Facilities Series E	0.4	0.0	0.0	0.0	8.6	8.6	9.0
Water System Facilities Series F	0.0	0.0	0.0	0.0	160.0	160.0	160.0
Water System Facilities Series G	86.8	0.0	4.6	0.0	8.6	13.2	100.0
Water System Facilities Series H	85.5	0.0	5.7	0.0	8.8	14.5	100.0
Water System Facilities Series I	158.9	0.0	5.8	0.0	15.3	21.1	180.0
Water System Facilities Series J	0.0	0.0	0.0	0.0	649.8	649.8	649.8
Water System Facilities Series K	88.6	0.0	3.1	0.0	8.3	11.4	100.0
Water System Facilities Series L	0.0	0.0	0.0	0.0	537.8	537.8	537.8
Water System Facilities Series M	166.3	0.0	9.9	0.0	13.8	23.7	190.0
Water System Facilities Series N	137.4	0.0	6.0	0.0	8.6	14.6	152.0
Water System Facilities Series O	156.5	0.0	8.4	0.0	170.1	178.5	335.0
Water System Facilities Series P	141.6	0.0	5.2	0.0	13.2	18.4	160.0
Water System Facilities Series Q	135.0	0.0	8.0	0.0	123.6	131.6	266.6
Water System Facilities Series R	0.0	0.0	0.0	0.0	20.7	20.7	20.7
Water System Facilities Series S	78.2	0.0	5.8	0.0	116.2	122.0	200.2
Water System Facilities Series T	0.0	0.0	0.0	0.0	135.7	135.7	135.7
Water System Facilities Series U	98.7	0.0	5.3	0.0	103.2	108.5	207.2
Water System Facilities Series V	0.0	0.0	0.0	0.0	20.6	20.6	20.6
Subtotal	*2,521.1*	*2.6*	*248.3*	*14.8*	*2,605.0*	*2,870.7*	*5,391.8*
Future Water System Facilities Bonds	215.0	0.0	15.0	0.0	20.0	35.0	250.0
Future East Branch Extension Bonds	43.0	0.0	3.0	0.0	4.0	7.0	50.0
Grand Total	**2,779.1**	**2.6**	**266.3**	**14.8**	**2,629.0**	**2,912.7**	**5,691.8** [c]

[a] Actual bond issue for all except future water system facilities and future East Branch Enlargement bonds.

[b] Bond financing and refunding costs include funds applied to debt service reserve requirements.

[c] Includes $2,215 million of refunded principal, leaving a net principal obligation of $3,477 million.

Capital resources revenues are deposited in the Central Valley Water Project Construction Fund and may be expended for paying interest on general obligation bonds and 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 revenue bonds, East Branch Enlargement bonds, East Branch Extension bonds, water system facilities bonds, initial project facilities bonds, proceeds from the Davis-Grunsky Act, California Water Fund monies, and capital resources revenues.

Line 20, Power Revenue Bonds through Series H, includes the proceeds applied from power revenue bonds for the Oroville, Devil Canyon, Castaic, Warne, Reid Gardner, Bottle Rock, Alamo, South Geysers, and small hydro projects.

No future power revenue bond sales are projected for the financial analysis.

Line 21, East Branch Enlargement, Current Bonds, shows that $485 million of Water System Revenue Bond proceeds have been applied to the East Branch Enlargement project through December 31, 1998. Of this total amount, $416 million were used for construction expenditures and $69 million for bond discounts, interest costs, and debt service reserves.

No future East Branch Enlargement revenue bond sales are projected for the financial analysis.

Line 22, East Branch Extension, Current Bonds, shows that $60 million of Water System Revenue Bond proceeds were available for the East Branch Extension project. Of this total, $15.6 million had been spent through December 31, 1998. The remaining $44.4 million will be used to pay future construction costs.

Line 23, East Branch Extension, Future Bonds, shows the Department's estimate of additional bonds required to complete construction of the East Branch Extension and to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Line 24, Water System Facilities, Current Bonds, shows that through December 31, 1998, $1.4 billion of proceeds from Water System Revenue Bonds, Series A through Series V, were applied to SWP projects other than the East Branch Enlargement and the East Branch Extension. Of this total amount, $1.2 billion were used to pay for construction expenditures and $0.2 billion to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Line 25, Water System Facilities, Future Bonds, shows that future water revenue bonds are needed to provide $215 million for construction of SWP water system facilities and $35 million for bond discounts, interest costs, and debt service reserve requirements.

Line 26, Subtotal, Water Revenue Bonds, is the total of Lines 21 through 25.

Line 27, Initial Project Facilities Bond Proceeds, shows the amount of general obligation bonds sold to provide initial financing costs for SWP facilities and for costs of planning certain additional conservation facilities.

Financing initial facilities from general obligation bonds was completed in mid-1972 and totaled $1.444 billion—$1.750 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 were used to finance planning studies of the Middle Fork Eel River Development. This financial analysis is not based on the use of any offset bond proceeds to meet capital requirements. If at some time the State constructs an additional conservation facility, as specified in Water Code Section 12938, the remaining offset bonds could be sold.

Line 28, Davis-Grunsky Act Program Bond Proceeds, shows, for simplification, the entire $130 million of capital expenditures authorized for the Davis-Grunsky Act Program according to the Burns-Porter Act as being funded 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 before 2000.

Line 29, Application of California Water Fund Monies, shows the amount of SWP costs financed under the Burns-Porter Act. The 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, 1998, was used to finance a total of $508 million of SWP costs.

Line 30, Interim Financing, shows the net annual amounts of funds flowing into and out of the Water Revenue Commercial Paper Notes program. The note program was established in March 1993 to provide an ongoing source of interim financing for Water System Projects prior to permanent financing from the sale of long-term revenue bonds. The Department has authority to issue up to $150 million of Water Revenue Commercial Paper Notes. A positive number indicates money borrowed from the program to finance construction costs. A negative number indicates money repaid into the program. The financial analysis assumes that all funds borrowed from the program will be repaid before the end of the analysis period.

Line 31, Application of Capital Resources Revenues to Construction, presents the Capital Resources Revenues applied for capital expenditures.

Line 32, Revenue Transfers Applied, shows monies assumed to be transferred to the California Water Fund according to provisions of the Burns-Porter Act and subsequently reappropriated to construction (see Line 37 in Table 14-2). Projected amounts for 1999 through 2010 include funds to finance expenditures for San Joaquin drainage facilities, as indicated in Line 12 of Table 14-1, and expenditures for additional conservation facilities, as indicated in Line 11.

Line 33, Subtotal, Other Capital Financing, is the total of Lines 27 through 32.

Line 34, Total Financing of Capital Requirements, totals Lines 20, 26, and 33.

Annual Revenues and Expenditures

In conducting the financial analysis of SWP operations, the Department concluded that projected payments by contractors and other revenues will be adequate to pay annual operations, maintenance, power, and replacement costs and meet all repayment obligations on funds used to finance SWP construction and other authorized costs during the period 1999 through 2010. Data on annual revenues and expenditures are presented in Table 14-2. A detailed discussion of each line item is presented below.

Project Revenues

SWP revenues consist primarily of SWP contractor payments required under their individual long-term water supply contracts. Those revenues are deposited in two funds: the Central Valley Water Project Revenue Fund, where all revenues pledged to revenue bonds are placed, and the California Water Resources Development Bond Fund-Systems Revenue Account, where 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.

Line 1, Capital Resources Revenues, includes:

- federal payments for SWP capital expenditures;
- appropriations for capital costs allocated to recreation;
- appropriations for SWP capital expenditures prior to passage of the Burns-Porter Act and according to Senate Bill 261 (1968);
- payments from Los Angeles Department of Water and Power for Castaic power development;
- advances from water contractors for construction of requested works;
- investment earnings on the Capital Resources Account; and
- 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 have been appropriated by the California Legislature from Tideland Oil Revenues. There have been no appropriations since 1985, and no appropriations are indicated in the Financial Analysis for the period 1999-2010. According to legislation enacted in 1989, a portion of the amount owed to the SWP by the State for costs allocated to recreation and fish and wildlife enhancement was offset against the amount the SWP owed to the California Water Fund (see line 36).

Lines 2 through 9, Water Contractor Payments, show amounts of the separate elements of water contractor payments.

Amounts in Line 4 also include revenues sufficient to cover costs associated with sales of excess power. Appendix B of this bulletin presents a detailed explanation of payments identified in Lines 2 through 9.

Operations, maintenance, power, and replacement 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 certain securities issued and loans obtained to finance SWP facilities as described below.

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, 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 14-8).

Calculations for determining the Project Interest Rate do not include proceeds from the sale of revenue bonds for Off-Aqueduct Power Facilities, the East Branch Enlargement facilities, or water system facilities defined in the Water Revenue Bond Amendment. Table 14-9 lists all bond sales by date and presents basic information used in the calculation of the Project Interest Rate.

Information about contractor water charges in Appendix B is based on known conditions and substantiates the Department's determination of 2000 water charges to be billed July 1, 1999. However, information about significant differences between the sum of future charges included in Lines 2 through 9 of Table 14-2 and the substantiation of 2000 charges included in Appendix B are as described below.

- Future capital costs in Appendix B are based on the prevailing prices as of December 31, 1998. Those costs presented in the financial analysis include allowances for price escalation.
- Pre-1999 charges in Appendix B represent charges as they should have been according to currently known conditions. Pre-1999 charges

included in Table 14-2 are those actually paid as part of previously determined bills.

- Charges in Appendix B are unadjusted for past overpayments or underpayments. Charges included in Table 14-2 for 1999 and thereafter have been adjusted for any apparent overpayments or underpayments of pre-1999 charges.
- Charges in Appendix B 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 V bonds. Charges in Table 14-2 also include amounts of the debt service and cover for assumed future bonds.
- The water bond revenue surcharge in Appendix B applies only to the Series B through Series V bonds. Surcharge values included in Table 14-2 apply to Series B through Series V bonds and to assumed future issues required to finance SWP construction costs included in Table 14-1.

Line 10, Subtotal, Water Contractor Payments, is the total of Lines 2 through 9.

Line 11, Revenue Bond Cover Adjustments, represents the credit to contractors resulting from the cover of 25 percent of 1 year's debt service for Off-Aqueduct Power Facility Bonds and Water System

Table 14-8
Effect of Revenue Bond Proceeds on Project Interest Rate
(Millions of Dollars)

Project	Revenue Bond Proceeds					Percentage of Total Amount Included in Calculating Project Interest Rate
	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	Total Principal Amount of Bonds	
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	0	0	75.9 [b]	75.9	99.2 [b]	77.0
Alamo Project	0	0	45.6 [b]	45.6	57.1 [b]	80.0
Small Hydro Project I	0	0	27.8 [b]	27.8	38.8 [b]	72.0
Water System Revenue Bonds (Series L)						
Facility						
Small Hydro Project I	0	0	1.5 [b]	1.5	2.1 [b]	71.0
Water System Revenue Bonds (Series Q)						
Facility						
Pyramid Project	0	0	3.0 [b]	3.0	3.9 [b]	77.0
Alamo Project	0	0	4.8 [b]	4.8	6.0 [b]	80.0
Water System Revenue Bonds (Series S)						
Facility						
Pyramid Project	0	0	8.0 [b]	8.0	10.4 [b]	77.0
Alamo Project	0	0	7.6 [b]	7.6	9.5 [b]	80.0
Water System Revenue Bonds (Series U)						
Pyramid Project	0	0	2.4 [b]	2.4	3.2 [b]	75.0
Alamo Project	0	0	3.2 [b]	3.2	4.0 [b]	80.0

[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 issues.

Table 14-9
Actual Bond Sales and Project Interest Rates, by Date of Sale

Bond Sales	Date of Sale	Dollar-Years [a] (Thousands)	Interest Cost (Thousands)	Issue Interest Rate [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 7/10/70	-	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	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 Notes	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	9.499	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	
$ 9,000,000 Series W Water Bonds	8/19/92	95,250	6,172	6.480	4.621
$537,830,000 Series L Water System Revenue Bonds	5/19/93	11,414,859	640,518	5.611	4.620
$ 2,000,000 Series X Water Bonds	9/01/93	26,000	1,247	4.796	
$ 1,400,000 Series Y Water Bonds	11/30/94	19,483	1,249	6.411	
$190,000,000 Series M Water System Revenue Bonds	12/19/93	3,911,846	194,981	4.984	
$152,000,000 Series N Water System Revenue Bonds	3/03/95	2,241,606	122,658	5.472	
$335,000,000 Series O Water System Revenue Bonds	12/05/95	7,528,890	375,667	4.990	
$160,000,000 Series P Water System Revenue Bonds	5/07/96	3,553,823	204,524	5.755	
$266,630,000 Series Q Water System Revenue Bonds	11/05/96	5,481,815	299,846	5.470	
$ 20,700,000 Series R Water System Revenue Bonds	3/10/97	564,125	36,627	6.493	
$200,205,000 Series S Water System Revenue Bonds	7/30/97	4,093,110	203,755	4.978	4.615
$135,665,000 Series T Water System Revenue Bonds	7/30/97	1,310,620	66,942	5.108	
$207,180,000 Series U Water System Revenue Bonds	12/01/98	4,032,075	200,759	4.979	
$ 20,580,000 Series V Water System Revenue Bonds	12/01/98	525,100	32,819	6.250	
Total		**174,034,974**	**10,288,196**		
Portion allocated to Project Interest Rate		**63,856,942**	**2,946,804**	**4.615**	**4.615**

[a] A unit equivalent to one dollar of principal amount outstanding for one year.

[b] The total interest cost (without regard to discounts paid or premiums received) divided by the total dollar-years, expressed as a percent.

[c] Determined by dividing cumulative interest costs by cumulative dollar-years, expressed as a percent. Excluding Oroville Field Division bonds and revenue bonds for Off-Aqueduct Power Facilities, the East Branch Enlargement facilities, East Branch Extension facilities, or water system facilities as defined in the Water Revenue Bond Amendment.

Revenue Bonds. Cover is collected as required by the bond resolutions to provide security to the bondholders. If not needed to meet annual bond service, the cover is credited to the contractors in the following year. The annual charges for the following cost components include an amount for bond cover:

- minimum OMP&R component of the Transportation Charge for Off-Aqueduct Power Facilities;
- Water System Revenue Bond Surcharge;
- capital cost component of the Transportation Charge for East Branch Enlargement Facilities;
- capital cost component of the Transportation Charge for Coastal Branch Extension Facilities; and
- capital cost component of the Transportation Charge for East Branch Extension Facilities.

Line 12, Rate Management Adjustments, shows the projected amount of revenue reductions allocated to SWP contractors after repayment of the California Water Fund (see Line 36). Under provisions of the Monterey Amendment, the reduction amount allocated to agricultural contractors is deposited into a trust fund to stabilize payments in water-short years. The urban contractor allocation is applied as a direct reduction in charges.

Line 13, Federal Payments for Project Operating Costs, shows federal payments made according to the December 31, 1961, agreement between California and the United States providing for the Department to operate and maintain the San Luis Joint-Use Facilities. According to the January 12, 1972, supplement to the agreement, the U.S. Bureau of Reclamation initially 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 water through the joint facilities.)

The percentage paid by USBR is scheduled to be reviewed every 5 years by USBR and the Department. The most recent review of the percentage paid by the USBR was completed in 1987 and resulted in a federal share of 44.09 percent. The amounts in Line 13 are based on the assumption that the federal share will continue at 44.09 percent for calendar years 1999 through 2010.

Line 14, Appropriations for Operating Costs Allocated to Recreation, shows appropriations made under the Davis-Dolwig Act. In passing the Davis-Dolwig Act, the California Legislature declared its intent that except for funds provided according to Assembly Bill 12 (1966), the Department 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 to be paid by annual appropriations from the General Fund. For fiscal years 1983-84 through 1998-99, no funds were appropriated for recreation and fish and wildlife enhancement purposes. No appropriations are indicated for 1999 through 2010.

According to legislation enacted in 1989, a portion of the amount owed to the SWP by the State for costs allocated to recreation and to fish and wildlife enhancement was offset against the amount the SWP owed to the California Water Fund (see line 36).

Line 15, Local Agency Payments under Davis-Grunsky Loan Repayment Contracts, shows repayment for $52.5 million of loans disbursed as of December 31, 1998. Repayment on any future loans was assumed to be beyond the period covered by the financial analysis.

Line 16, Revenue Bond Proceeds, includes bond proceeds classified as special reserves according to the description of revenue bond financing in Line 16 of Table 14-1. 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.

Line 17, Interest Earnings on Operating Revenues, 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.

Line 18, Payments under Oroville-Thermalito Power Sale Contract, shows payments from Pacific Gas and Electric Company, Southern California Edison

Company, and San Diego Gas and Electric Company. Those utilities purchased all power generation from Hyatt and Thermalito powerplants before April 1, 1983, according to a power sale contract dated November 29, 1967. The 1952-98 entry includes amounts of final settlement of payments made according to the contract.

Line 19, Miscellaneous Revenues, includes all other operating revenues not included in Lines 2 through 18.

Line 20, Subtotal, Other Revenues, is the total of Lines 13 through 19.

Line 21, Total Operating Revenues, is the total of Lines 10, 11, 12, and 20.

Line 22, Total Operating Revenues and Capital Resources Revenues, is the total of Lines 1 and 21.

Project Expenses

Project expenses include:

- operations, maintenance, and power costs;
- deposits to replacement reserves;
- deposits to special reserves;
- capital resources expenditures; and
- debt service.

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 are deposited in the California Water Resources Development Bond Fund-Systems Revenue Account and are disbursed according to the following four priorities of use as specified in the Burns-Porter Act:

1. SWP operations, maintenance, power, and replacement costs;
2. general obligation bond debt service;
3. repayment of expenditures from the California Water Fund; and
4. deposits to a reserve for future SWP construction.

Project expenses are presented in Lines 23 through 33 of Table 14-2.

Line 23, Project Operations, Maintenance, and Power Costs, shows the OM&P portion of the historical and projected costs presented in Table 14-10 on page 175.

Table 14-10 and Line 23 of Table 14-2 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 13 and 14.

Allowances for cost escalations are included in OM&P costs through the year 2000. 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 expenses for the SWP. Assumptions about future power sources and costs are discussed in Chapter 10, “Power Resources.” Line 23 also includes costs associated with power transactions that result in the sale of power not required for the delivery of water.

Line 24, Deposits to Replacement Reserves, shows funds set aside as required by contract for replacing existing SWP facilities. By December 31, 1998, $57.7 million had been spent for replacement costs; the balance of the replacement reserve as of that date was $24.3 million. Replacement reserve amounts are also included in Table 14-10.

Line 25, Deposits to Special Reserves Under Revenue Bond Financing, includes two significant components: special reserve deposits related to revenue bonds and capital resources revenue carryover from prior years used for construction in the current year. Special reserve deposits are the net of several income

and expenditure items. Income items related to revenue bonds are 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);
- water contractor payments or bond proceeds set aside for debt service reserves;
- water contractor payments for revenue bond cover requirements; and
- deposits to and withdrawals from operating reserves to meet day-to-day cash flow requirements.

The 1952-98 column also includes 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 related to revenue bonds are as follows:

- 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; and
- 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 25 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.

Line 26, Capital Resources Expenditures, includes the amount of capital resources revenues applied to construction that is shown in Line 31 of Table 14-1. In Table 14-2, these expenditures are funded out of withdrawals from the reserves in Line 25 and do not affect net revenues shown in Line 35.

Lines 27 and 28, Payment of Debt Service on Bonds Sold through December 31, 1998, show the total principal and interest payments on bonds sold to date. Table 14-11 on page 176 summarizes payments on general obligation bonds (Series A through Y water bonds), power revenue bonds by project, and water system revenue bonds.

The last bonds, sold on December 1, 1998, were the Series V Water System Revenue Bonds. Proceeds from the Series V bonds were used to refinance previously issued bonds and to pay for bond financing costs.

Lines 29 and 30, Payments on Projected Future Water Bonds, include the projected annual service amounts for future water revenue bonds included on Lines 23 and 25 of Table 14-1 for the East Branch Extension and other water system facilities. Assumptions about the service on these future bonds are as follows:

- interest costs for the water revenue bonds average 6.0 percent; and
- 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.

Lines 31 and 32, Total Payments of Bond Debt Service, show the total of principal payments indicated on Lines 27 and 29 and the total of interest repayments indicated on Lines 28 and 30.

Line 33, Subtotal, Debt Service, is the total of Lines 31 and 32.

Line 34, Total Operating Expenses and Debt Service, is the total of Lines 23, 24, 25, 26, and 33.

Line 35, Net System Revenues, shows the annual amounts of revenues remaining after the payment of operating costs and bond debt service costs.

Line 36, California Water Fund Repayment, shows repayments according to the Burns-Porter Act, which 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 $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 10 years. A portion of this reimbursement was offset by the amounts owed to the SWP by the State for costs allocated to recreation and fish and wildlife enhancement.

Repayment of the California Water Fund was completed in 1998. As of December 31, 1998, reimbursements to the California Water Fund totaled $508 million. Of this total, approximately $296 million were direct repayments and $212 million were offsets for recreation and fish and wildlife enhancement expenditures.

Line 37, Revenues Used for Capital Expenditures, includes the amounts required annually for financing scheduled capital expenditures. Revenues not needed for operating costs, debt service, or repayment of the California Water Fund are available for financing SWP capital expenditures.

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 shown in Table 14-12 represent both unescalated and escalated costs of water according to service areas for years 1999 and 2001. The unit rates in Table 14-12 include costs of existing and future SWP facilities accounted for in Table 14-1 and Table 14-7. The unit charges are based on the assumption that in 1999 and 2001, the SWP will be able to deliver the entire amounts of water requested by contractors. The unit water charges included in Table 14-12 are listed both as unescalated 1998 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 3 percent per year for 1999 through 2010. The escalation rates for future power sources vary, depending on the source of energy.

Table 14-12
Estimated Unit Water Charges for 1999 and 2004, by Service Area
(Dollars per Acre-Foot)

Service Area and Charge	1999		2004	
	Unescalated	*Escalated*	*Unescalated*	*Escalated*
Feather River Area				
Capital; Operations, Maintenance, and Replacement (OM&R)	31	31	27	27
North Bay Area				
Capital; OM&R	137	137	127	128
Power	11	11	12	12
Total	**148**	**148**	**139**	**140**
South Bay Area				
Capital; OM&R	88	88	85	87
Power	32	32	30	31
Total	**120**	**120**	**115**	**118**
Coastal Area				
Capital; OM&R	506	506	505	506
Power	71	71	80	83
Total	**577**	**577**	**585**	**589**
San Joaquin Area				
Capital; OM&R	52	52	50	51
Power	15	15	14	15
Total	**67**	**67**	**64**	**66**
Southern California Area				
Capital; OM&R	155	155	145	147
Power	75	75	72	73
Total	**230**	**230**	**217**	**220**

Information for this chapter was provided by the State Water Project Analysis Office in conjunction with the Division of Fiscal Services.

Chapter 15

SWP Education and Information

Sesquicentennial and water awareness event at Edmonston Pumping Plant

Significant Events

- In June 1998, the Office of Water Education staged and videotaped a State Water Project history seminar, featuring presentations by former Department directors and other experts on the planning, construction, and development of the SWP. Videotapes of the seminar were sent to the State Water Contractors. The seminar was attended by State Water Contractors and their member agencies.
- During 1998, OWE expanded its emergency response capability by training more than 40 emergency public information officers for temporary duty during crises.
- During the 1998 flood season, OWE helped flood managers conduct frequent news briefings and provided public information officer staff for media liaison at the State-Federal Flood Operations Center. The Graphic Services Branch provided photo and videotape documentation of flood incidents.
- OWE's 1998 work products won 10 awards in the annual competition sponsored by the State Information Officers Council.
- OWE created several portable sesquicentennial exhibits showcasing 150 years of water development in California.

The Department of Water Resources' Office of Water Education conducts public information and education programs to inform the news media and educate the public about the value and operations of the State Water Project. These programs use an array of public outreach methods, including news media relations, publications, videos, Internet web sites, SWP visitor centers and tours, brochures, exhibits, and special events.

SWP Information and Education Programs

Media Outreach

Flood Emergency. Flood-related news outreach and emergency response preparedness were top priorities for the Office of Water Education during 1998.

OWE provided special training for flood emergency public information officers, giving instruction on emergency response and media training to more than 40 emergency public information officers.

During the winter flood season of 1998, OWE public information officers staffed the State-Federal Flood Center, assisting flood managers with media liaison. Media center briefings provided a key function of channeling news media to one place for comprehensive daily updates from Flood Center experts.

Daily flood news updates by e-mail became the foundation for a water news “electronic clipping” service provided by OWE to Department managers and program supervisors.

OWE prepared a new publication, *How to Fight Flooding at Home: Easy Ways to Keep Water Out of Your House*. It was distributed by the California Conservation Corps at sandbag training sessions in neighborhoods throughout the State.

In January 1998, public information officers provided media liaison and issued news releases on the safe recovery of a 42-foot Department boat that sank in Lake Oroville. The Graphic Services Branch provided photo and video coverage.

Other Media Activities. In other media activities during 1998, the Department issued news releases on many topics relating to the SWP, project operations, California Aqueduct repairs, and water supply; provided numerous media advisories, interviews, and faxes; developed news releases with other water agencies; and assisted the CALFED Bay-Delta Program with its public relations program.

Key Department outreach included a March announcement that the SWP planned to make100 percent of requested deliveries during 1998; April and May media releases on completion of permanent repairs to two sites along the California Aqueduct; and an October update on flood season preparations.

To help Department officials deal effectively with news reporters, OWE continued its 1-day training sessions, *Working With the News Media*. The workshop, taught by a professional trainer with experience as a government information official and television news director, provided Department officials expert, practical guidance on routine and emergency communications with the news media.

Internet Web Site

The Department’s Central Internet website, the DWR California Water Page (http://www.dwr.water.ca.gov), has been online since January 1995. Usage tripled during critical flood periods.

Publications

DWR People. The Department's employee newsletter continued as a quarterly publication during 1998. Stories spotlight employees, their accomplishments, skills, news, awards, and retirements. This year's issues featured stories on major California aqueduct repairs, the State Water Project Analysis Office, and the water safety program.

DWR Update. An employees-only online newsletter, *DWR Update*, provides news accounts on Department changes and events, employee assignments and accomplishments, statewide water issues, and various announcements. Information is added and revised weekly or as news develops.

DWR News. This news magazine is published twice yearly, in spring and fall. It features in-depth reporting of departmental programs and projects, as well as significant statewide water issues. During 1998, major stories included a feature on former Director David N. Kennedy and a retrospective summary of major departmental projects during his 15-year tenure from 1983 to 1998.

SWP Atlas. Initial work on a comprehensive SWP Atlas was begun in December 1998, at the direction of former Director David N. Kennedy. The atlas will feature background information of the SWP, as well as detailed technical drawings and key facility statistics. Publication is scheduled for mid-1999.

Brochures. The Department routinely publishes an array of brochures describing SWP facilities. During 1998, OWE revised and reprinted four brochures on SWP-related topics: *California's State Water Project, State Water Project, Recreation Facilities, Devil Canyon Powerplant, and Vista del Lago Guide (*also in Spanish*).*

In addition, the Department prepared new brochures on *Staying Safe on the California Aqueduct with Albert and Einstein* and on the SWP visitors centers. The *Staying Safe on the California Aqueduct* brochure uses the Department's water mascot cartoon characters, Albert and Einstein, to teach children water safety. The SWP visitors centers' brochure, *California's Water*, promotes visits to the three visitors centers, as well as Edmonston Pumping Plant and Banks Pumping Plant.

Sesquicentennial. A special sesquicentennial brochure was created to illustrate water development highlights during 150 years of California history.

Video Projects

Coastal Video. *Pipeline*, a video documenting construction of the Coastal Branch, was produced and distributed.

Levee Improvement. *Nick of Time,* a video demonstrating techniques used to improve 5 miles of Delta levee, was produced. It recounted the Department's levee improvement activities to protect the town of Thornton from flooding.

SWP History. The Graphic Services Branch videotaped the June 1998 SWP history seminar featuring presentations by former Department directors about the history and importance of the SWP.

Flood Footage. During the 1998 floods, the Graphic Services Branch provided photographic and videotaped documentation of flood events. In 1998, a videotape of the February flood incidents was shot and edited for presentation to the Department's Division of Flood Management.

Delta Program. The Graphic Services Branch produced a videotape, entitled *The Delta Dilemma*, to summarize CALFED's efforts to improve Delta water quality, water supply reliability, and ecosystems.

Video Catalog. The Department produced a new catalog to promote public access to all current Department videos.

Visitors Centers Program

Activities. During 1998, staff at the visitors centers welcomed 447,365 visitors and provided information on the SWP and its operations. In addition to meeting visitors' needs, staff also performed community outreach to promote water safety and participated in community events.

In March 1998, San Luis Field Division took part in the Wild on Wetlands Weekend at the Los Banos campus of Merced College. Staff conducted tours at the Gianelli Pumping-Generating Plant, Sisk Dam, and Romero Visitors Center. In April 1998, SLFD

staff provided information to the public attending Farm Day at Merced College. Southern Field Division staff took part in an October 11 "NatureFest" in Frazier Park, the May 30 annual "Water Awareness Fair" in Palmdale, and assisted at a May 16 bikeway event in Antelope Valley. Staff activities at other special events during May 1998 are listed under Water Awareness Month Activities. In October, staff from San Joaquin and Southern field divisions and headquarters worked at three Department booths at the Eastside Reservoir Recreation Show near Hemet.

The July 4 fireworks at Oroville Dam, cosponsored by Oroville Field Division, attracted a crowd estimated at 10,000 people. About 3,000 people attended OFD's Fall Salmon Festival at the Feather River Fish Hatchery. The Department provided an educational booth and conducted hatchery tours.

Table 15-1 shows the number of visitor-days in the different field divisions.

Table 15-1
Visitor-Days Recorded in 1998, by Location

Field Division	*Visitor-Days*
Oroville	126,115
Delta	812
San Luis	181,363
San Joaquin	5,347
Southern	133,728
Total	**447,365**

Visitors Centers Evaluations

During 1998, staff conducted evaluation surveys at Vista del Lago, Romero, and Oroville visitors centers. A total of 988 visitors took part in the surveys.

The survey results indicated a high level of customer satisfaction with the information provided by visitors centers. Visitors reported that brochures, exhibits, and interaction with staff provided excellent information on water. However, the results also reported that highway signage needed improvement.

Water Safety Education

OWE designed and developed *Albert and Einstein* water safety messages that were shown in 115 Century movie theaters in cities near the California Aqueduct, starting in May 1998. The messages consisted of three slides that were cycled every 6 to 7 minutes prior to the start of each movie. Each message was 10 to 15 seconds long, reading (1) "Don't Swim in the California Aqueduct, (2) Learn to Swim, Learn to Float, Be Drown-Proof for Life, and (3) Swim With a Buddy, It's Safer." High recreational use of SWP facilities makes water safety a major factor in how the Department relates to users of SWP facilities.

An intensive effort by staff of the five field divisions aimed at encouraging water safety in their communities resulted in substantial outreach to groups in communities along the California Aqueduct.

SWP Visits and Tours

During 1998, the Department welcomed 67 delegations with 1,087 individuals from the following countries: Australia, Brazil, Canada, China, Colombia, Egypt, Ecuador, Hungary, Japan, Korea, Pakistan, Saudi Arabia, Taiwan, Tanzania, and Turkey.

Displays and Exhibits

During 1998, the Department created several new sesquicentennial exhibits featuring highlights of 150 years of water development in California. The sesquicentennial exhibits and matching information brochures were especially popular with water districts, where many were displayed at the offices. The historic displays were shown at about 40 venues statewide during 1998, including the California State Fair.

OWE's design unit created and installed a James Beckwourth exhibit at the Oroville Visitors Center. James Beckwourth was a famous African-American pioneer guide who helped the settle the region.

In January, recreational opportunities along the SWP were displayed for visitors at the International Sportsmen's Exposition at CalExpo in Sacramento. Emphasis was on Northern California recreation sites.

In March, Southern California SWP sites were highlighted at the Fred Hall International Boat Show in Long Beach.

The Association of California Water Agencies' spring conference provided an opportunity to promote the SWP's role in transporting water.

In October, staff participated in the sesquicentennial exhibit at the League of California Cities Exposition, held in Long Beach.

School Education Program

The Department continues support of its School Education Program, which began in 1991. The program's goal is to provide students and educators with a statewide perspective on water issues, such as conservation, conveyance systems, and the water cycle. This is done by developing and promoting high quality materials that are provided at no charge to schools, educators, and water districts.

Key program achievements for 1998 included:

- A video produced in June 1998, entitled *Water: Who Needs It?*, for children in grades K-6. This video teaches students the importance of water to living things, and how they can protect and conserve water.
- By the end of 1998, a teacher-student activity packet was developed for the *Water: Who Needs It?* video. The packet helps teachers lead activities that reinforce concepts in the video.
- Earlier in the spring, the Department developed a similar packet for *The Water Cycle* video, a program produced in 1997. It depicts the four phases of the water cycle. This packet also reinforces concepts presented in the video.

Water Awareness Month Activities

During 1998, the Department, for the 11th consecutive year, celebrated May as Water Awareness Month in California.

During May, the Department worked with water agencies throughout California to develop a water-education kit suitable for teachers and students in grades K-6. This cooperative effort resulted in sending 3,000 free education kits statewide, featuring new activities on water.

The Department celebrated Water Awareness Month at a series of special events, including:

- May 6-8, California Water Plan Exhibit at ACWA spring conference in Monterey. This exhibit drew attention to key findings in Bulletin 160-98, the most recent edition of the *California Water Plan.*
- May 7, Edmonston Pumping Plant Water Awareness Fishing Event. The Department's San Joaquin Field Division hosted 150 students from three schools in the Kern County communities of Taft and Bakersfield. This event drew coverage by regional news media, including the *Bakersfield Californian*.
- May 8, Water Serenade at ACWA spring conference. Eighty students from Monte Vista Elementary School in Monterey sang a new song about water at the May 8 breakfast session of the ACWA conference.
- May 9, Hyatt Powerplant Open House at Oroville Dam. Oroville Field Division sponsored this event, timed to coincide with Feather Fiesta Days, a major Oroville community festival.
- May 16, California Aqueduct Biking Event. More than 100 bicyclists enjoyed this special ride along a 28-mile portion of the California Aqueduct in Antelope Valley in Southern California. SFD sponsored this event jointly with the Antelope Valley Trails, Recreation and Environmental Council, and the Grapevine Mountain Bike Association.
- May 16, Kids' Fishing Day at San Luis Reservoir. SLFD cosponsored this Ninth Annual Kids' Fishing Day at San Luis Creek at O'Neill Forebay. Other sponsors and supporters included the Department of Parks and Recreation and the Four Rivers Natural History Association.

Traveling exhibits on California water history during May were featured at four venues as part of Water Awareness Month: May 3 at the Cinco de Mayo Fiesta in San Jose; May 14-17 at the Gold Discovery Exposition in Auburn; May 21-25 at the National Orange Show in San Bernardino, and May 30-31 at the Apricot Festival in Patterson.

Information in this chapter was contributed by the Office of Water Education.

Appendix B
Data and Computations Used to Determine 2000 Water Charges

Appendix B

Data and Computations

Used to

Determine 2000 Water Charges

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Tables (continued)

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Appendix B

Data and Computations

Used to

Determine 2000 Water Charges

The Department of Water Resources annually furnishes Statements of Charges to the 29 long-term State Water Project water supply contractors. Article 29(e) of the Standard Provisions for Water Supply Contracts, approved August 3, 1962, describes those statements:

> *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 performs an annual comprehensive review and redetermination of all water supply and financial aspects of the 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, which concern the Delta Water Rate and annual transportation charges, respectively.

Appendix B includes data used to document the redetermination of water charges to be paid by contractors during calendar year 2000. The information is based on established data about the SWP, both known and projected, as of June 30, 1999.

The computational procedures and interrelationships between tabulations in this appendix are outlined in Figure B-1 and Figure B-2. All tables referenced in Figures B-1 and B-2 follow this text.

Types of Water Charges

Charges to SWP water supply contractors include the costs of facilities for the conservation and development of a water supply and the conveyance of such supply to SWP service areas. These facilities are classified as "Project Conservation Facilities" and "Project Transportation Facilities" in the Standard Provisions for Water Supply Contract. The names of the main facilities in each classification follow.

Project Conservation Facilities

- Frenchman Dam and Lake
- Grizzly Valley Dam and Lake Davis
- Antelope Dam and Lake
- Oroville Dam and Lake Oroville
- Oroville power facilities
- Delta Facilities
- A portion of the California Aqueduct from the Delta to Dos Amigos Pumping Plant
- Sisk Dam, San Luis Reservoir, and 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 a Delta Water Charge and a Transportation Charge for project water.

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

Figure B-1
Relationships of Data Used to Substantiate Statements of Charges

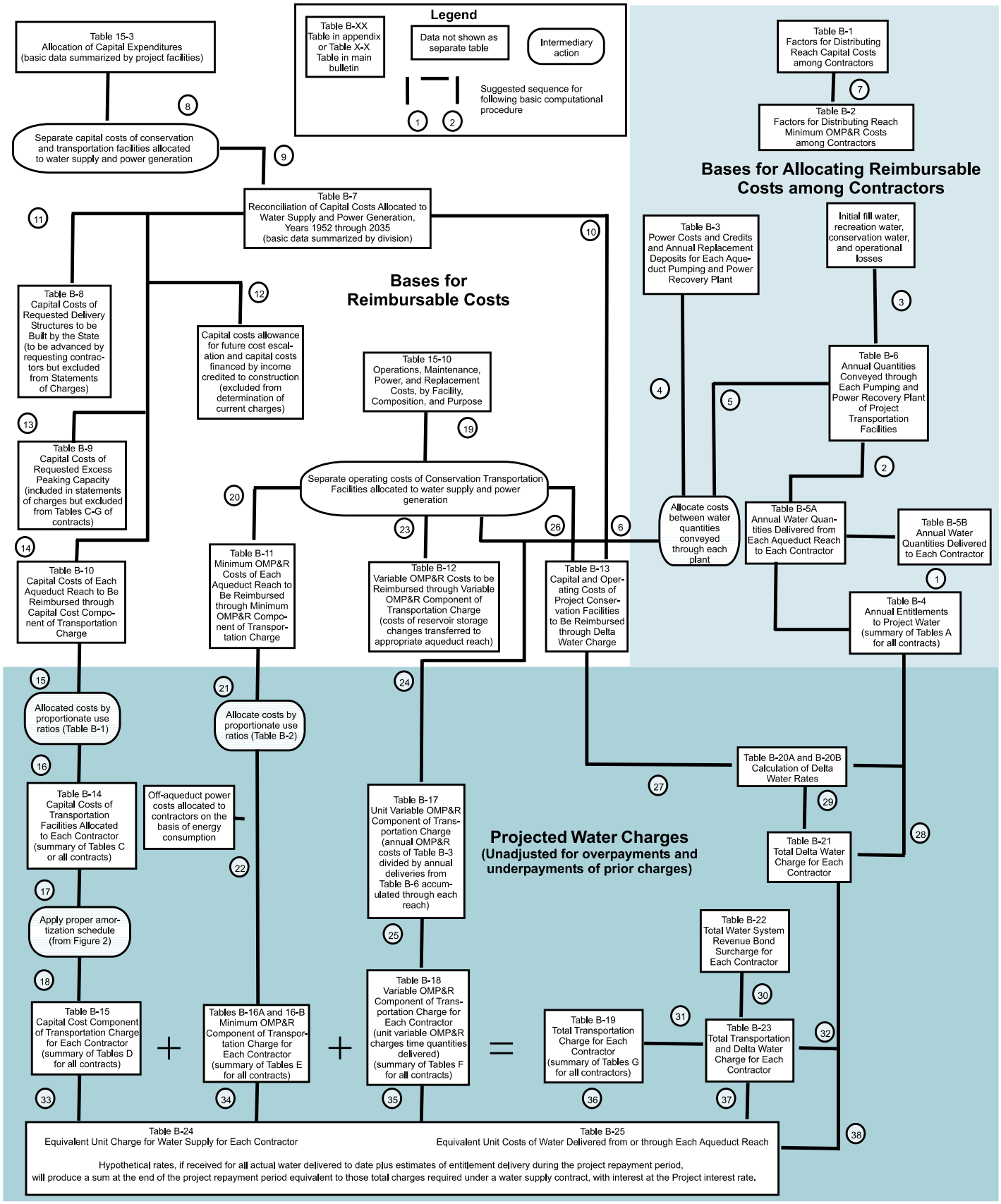
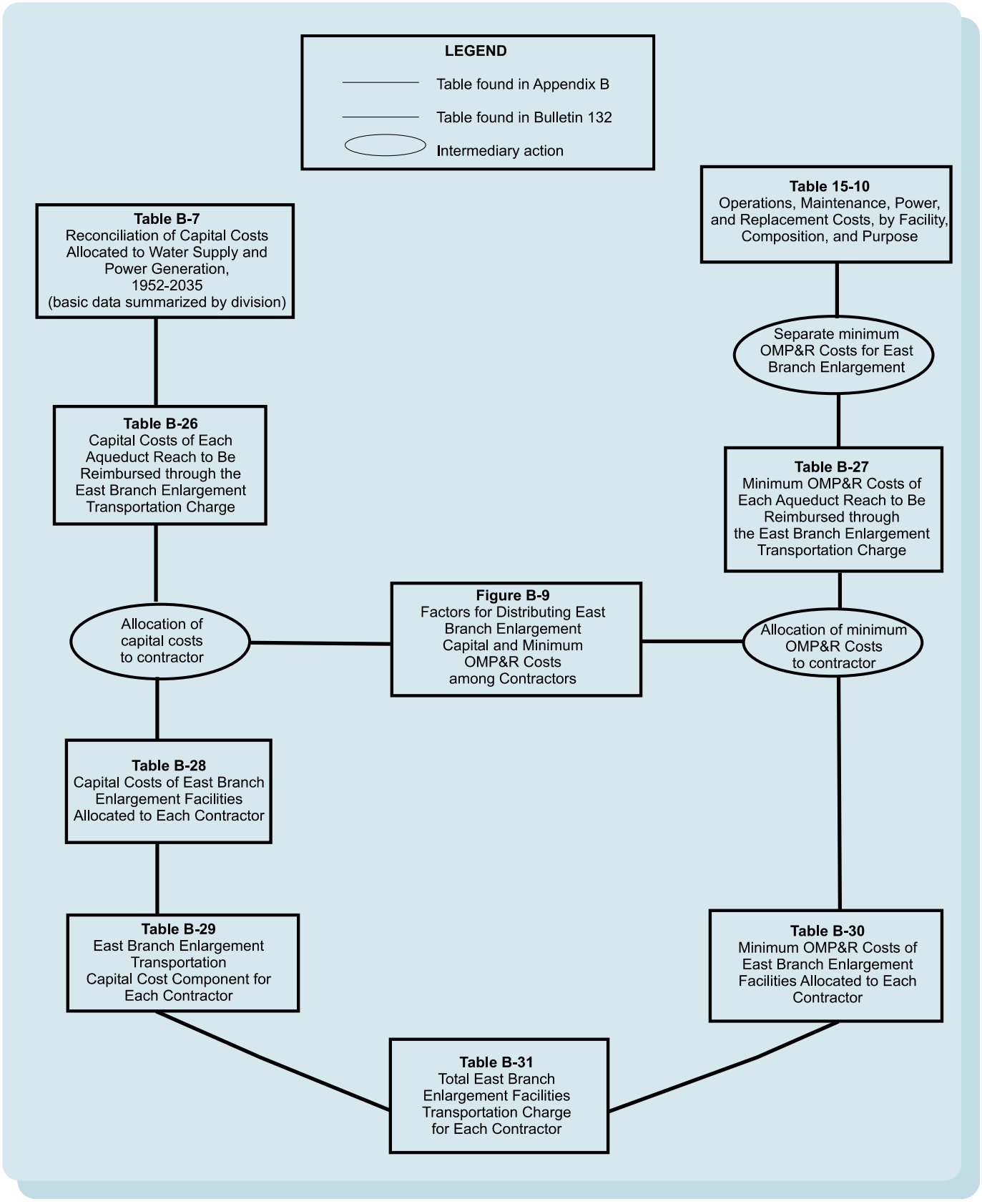


Figure B-2
Relationships of Data Used to Substantiate East Branch Enlargement Charges



outstanding reimbursable costs of the Project Conservation Facilities, with appropriate interest, by the end of the repayment period (2035).

The Transportation Charge is 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 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' shares of reimbursable operating costs are repaid in the year such costs are incurred by the State.

The East Branch Enlargement Transportation Charge is paid by the seven Southern California contractors participating in the enlargement. San Bernardino Valley Municipal Water District advanced funds to pay the district's allocated capital costs for the East Branch Enlargement. The remaining six contractors pay an allocated share of the debt service on revenue bonds sold to finance the enlargement. Each contractor also will pay an allocated share of the minimum operation, maintenance, power, and replacement (OMP&R) costs of the East Branch Enlargement.

Composition and Timing of Water Charges

As shown in Figure B-3, the Delta Water Charge and the Transportation Charge consist of the following three components:

1. Conservation and Transportation capital cost components, which will return to the State all reimbursable capital costs;

2. Conservation and Transportation minimum OMP&R components, which will return to the State all reimbursable operating costs that do not depend on or vary with quantities of water actually delivered to the contractors; and

3. A Transportation variable OMP&R component, which will return to the State all reimbursable operating costs that depend on, and vary with, quantities of water actually delivered to the contractors.

The formula for computing the Delta Water Rate, Article 22(f) of the Standard Provisions for Water Supply Contract, was 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 repayment period. This appendix includes a redetermination of the Delta Water Rate for 2000.

Article 28 of the standard provisions stipulates 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 1999 included in those tables are the redetermined amounts and do not equal the amounts actually paid by contractors.

As provided under the Water System Revenue Bond Amendment to the water supply contracts, differences between actual payments under the Transportation capital cost component 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 Statements of Charges.

These redeterminations exclude four charges associated with water service other than the Delta Water Charge and the Transportation Charge. The excluded charges (and the manner in which such excluded charges are treated in this appendix) are:

1. Advances of funds pursuant to Article 24(d) of the standard provisions for excess capacity constructed by the State at the request of contractors;

2. Advances of funds pursuant to Article 10(d) of the standard provisions for delivery structures (turnouts) constructed by the State at the request of contractors. Partial information concerning

Figure B-3
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 operations
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 Gianelli Pumping-Generating Plant
7. Program costs (portion) to offset annual fish losses resulting from pumping at Banks 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” Transportation 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 Banks 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, Warne, and Castaic power generation credited at the powerplant reach and charged to aqueduct pumping plants
3. Hyatt-Thermalito Diversion Dam powerplant 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 powerplants
5. Credits from sale of excess SWP system power
6. Program costs (portion) to offset annual fish losses resulting from pumping at Banks Pumping Plant (Department of Water Resources-Department of Fish and Game agreement)

Note: Excludes costs recovered under the East Branch Enlargement Transportation Charge.

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, pursuant to Article 21 of the standard provisions, are also excluded. Those payments are generally based on the unit rates shown in Table B-25. Net revenues resulting from noncontractor service are applied as indicated on page 24 of Bulletin 132-71; and

4. Payments under the Devil Canyon-Castaic contract for costs of the Devil Canyon-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, due January 1 and July 1 of each year, based on statements furnished by the State on or before 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, due the first of each month and based on statements furnished by the State on or before July 1 of the preceding year; and

3. The variable OMP&R component of the Transportation Charge is paid in varying monthly amounts and is 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 on or before July 1 of the preceding year. Those unit charges may be revised 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 describes the procedures for allocating reimbursable costs of Project Transportation Facilities among contractors (see upper right portion of Figure B-1). Those costs do not include annual costs of Off-Aqueduct Power Facilities, which are explained in the section “Project Water Charges.”

Capital and Minimum OMP&R Costs

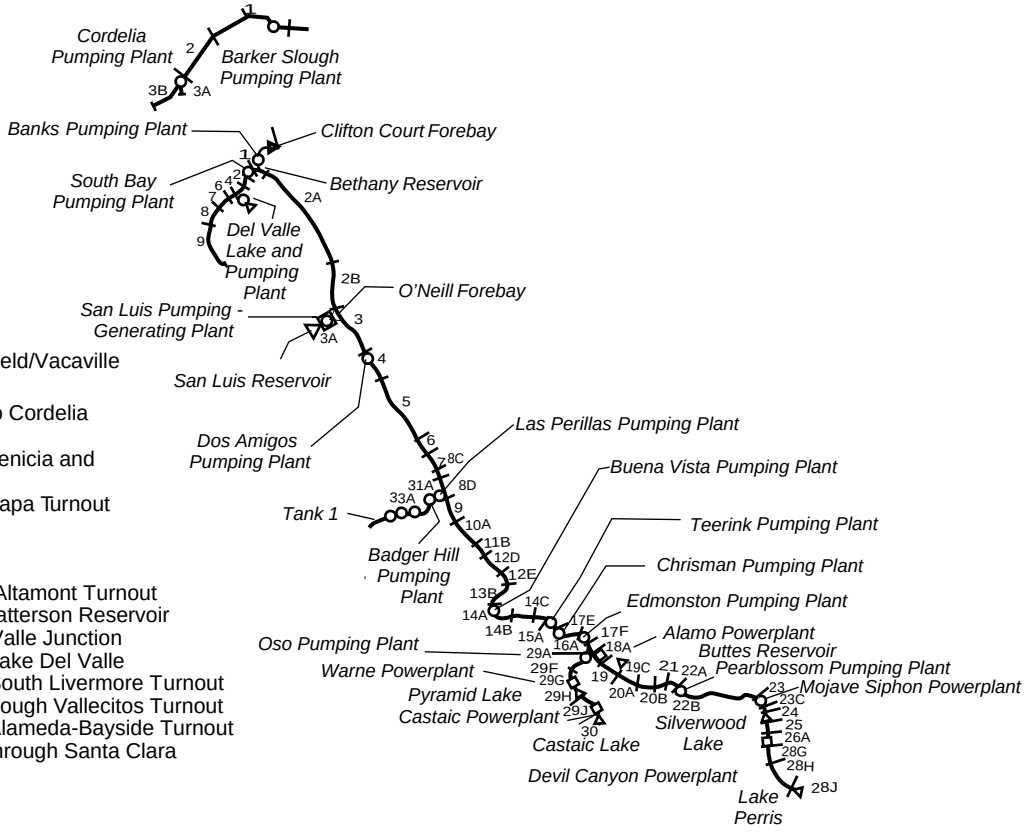
Figure B-4 includes information about the repayment reaches that form the basis for allocating reimbursable costs of the Project Transportation Facilities among contractors.

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.

The derivation of ratios that represent the proportionate maximum use of each aqueduct reach by the respective contractors was first reported in Bulletin 132-70. The ratios in Bulletin 132-70 were subsequently revised for the North Bay Aqueduct, the South Bay Aqueduct, the California Aqueduct from the Delta to Castaic Lake, and the Coastal Branch.

All the revisions reported in previous bulletins regarding the derivation of ratios that represent the proportionate maximum use of each aqueduct reach by the respective contractors were last reported in Tables B-1 and B-2 of Bulletin 132-91. Beginning in 1998, the ratios for the California Aqueduct from the Delta to Silverwood Lake, plus Reach 31A, were revised to reflect the permanent transfer of 25,000 acre-feet from the Kern County Water Agency to the Mojave Water Agency. Beginning in the year 2000, the ratios for the California Aqueduct from the Delta to Castaic Lake were revised to reflect the permanent transfer of 41,000 acre-feet from Kern

Figure B-4
Repayment Reaches and Descriptions



North Bay Aqueduct

1 Barker Slough through Fairfield/Vacaville Turnout
2 Fairfield/Vacaville Turnout to Cordelia Forebay
3A Cordelia Forebay through Benicia and Vallejo Turnouts
3B Cordelia Forebay through Napa Turnout Reservoir

South Bay Aqueduct

1 Bethany Reservoir through Altamont Turnout
2 Altamont Turnout through Patterson Reservoir
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

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 Teerink Pumping Plant
15A Teerink Pumping Plant to Chrisman Pumping Plant
16A Chrisman Pumping Plant to Edmonston Pumping Plant

Tehachapi Division

17E Edmonston Pumping Plant to Porter Tunnel
17F Porter Tunnel to Junction, West Branch, California Aqueduct

California Aqueduct (continued)

Mojave Division

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
23C Mojave Siphon Powerplant
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

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 Warne Powerplant
29H Pyramid Dam and Lake
29J Pyramid Lake through Castaic Powerplant
30 Castaic Dam and Lake

Coastal Branch, California Aqueduct

31A Avenal Gap to Devil's Den Pumping Plant
33A Devil's Den Pumping Plant through Tank 1

County Water Agency to Castaic Lake Water Agency.

Table B-1 presents the reach ratios currently applicable to reimbursable capital costs.

Table B-2 presents corresponding ratios for allocating 2000 reimbursable minimum OMP&R costs among contractors. 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.

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 depend on and vary with the amount of SWP water deliveries. (The minimum OMP&R component results in a return of those operating costs that do not vary with deliveries.) Under 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 summarizes the total power costs and credits for each aqueduct pumping and power recovery 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); and
- Payments for replacement of major plant machinery components having economic lives shorter than the project repayment period. In 1997, the Department discontinued charging for a sinking fund for replacements. Replacement costs for 1999 and thereafter are to be paid on an annual basis as the costs are incurred.

Table B-3 excludes plant capacity and energy costs associated with surplus and unscheduled 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. An amendment to the long-term water supply contracts in 1973 significantly changed the rate structure for surplus water service. Capacity and energy costs for pumping surplus and unscheduled water were allocated directly to those water contractors receiving surplus and unscheduled water service. A contract amendment in 1991 again revised the rate structure to provide for payment of costs through a melded power rate. These revisions to charges for surplus and unscheduled water are effective from the date of the amendments and are not applied to past charges.

An interruptible water program was established in 1994. This program is based on individual annual contracts; costs for interruptible water actually delivered are included in Table B-3.

Water Conveyance

The water conveyance quantities that form the basis for allocating costs are presented in Tables B-4, B-5A, B-5B, and B-6.

Table B-4 presents the schedules of annual entitlements as set forth in Table A and Article 6(a) of each water supply contract.

Table B-5A shows amounts of actual and projected entitlement water quantities delivered from each aqueduct reach to each contractor. Projected deliveries for years 1999 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 deliveries prior to May 1, 1973, and actual interruptible water deliveries in 1994 and after.

Table B-5B presents a summary 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, and actual deliveries of interruptible water in 1994 and after.

Table B-6 summarizes the annual entitlement water quantities conveyed or to be conveyed through each

aqueduct pumping plant or powerplant 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 bear the same variable OMP&R costs per acre-foot as they would if the deliveries were actually conveyed from the Delta in that year. 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) 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 pre-consolidation 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) that are allocable to storage accretions are assigned to the minimum OMP&R costs of the respective reservoirs. With the exception of Banks Pumping Plant, "Reservoir Storage Changes" also includes SWP water placed into Southern California groundwater storage from 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). At Banks Pumping Plant, groundwater additions and withdrawals are included in "Conservation Water."

Table B-6 also summarizes the following two amounts under the heading "Conservation Water" (Column 25):

1. Net annual water amounts stored and projected to be stored in San Luis Reservoir; and

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 above for Transportation Facilities also applies to water delivered from storage in Conservation Facilities, except that the 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 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 Banks Pumping Plant. That transfer is equal to the variable OMP&R cost per acre-foot of delivery through 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, and actual deliveries of interruptible water in 1994 and after.

Bases for Reimbursable Costs

This section describes the methods used to derive the costs allocated by the procedures outlined in the preceding section. A diagram of the cost derivation process is shown in the upper-left quadrant of Figure B-1.

First, the capital and minimum OMP&R costs of all SWP facilities are allocated among the various project purposes according to the allocation percentages in Table 1. Those percentages may be subject to revision in the future.

The redeterminations in this appendix involve only the SWP costs that are allocated to water supply and power generation.

Capital Costs

Capital costs used in the redeterminations in this appendix reflect prices prevailing on December 31, 1998; future cost escalation will be reflected in subsequent bulletins.

Table B-7 presents a reconciliation of estimated total capital costs of each Project Conservation Facility and each Project Transportation Facility. This table shows the relationship of Project Conservation and Transportation costs allocated to contractors (Tables B-8, B-9, B-10, and B-13) to the total SWP capital costs projected by the Department.

Table B-8 shows 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 B-9 lists costs and payments for excess capacity built into SWP Transportation Facilities according to amendments to contracts with Metropolitan Water District of Southern California, 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; and

3. Credits for advances in excess of costs, which were applied to respective contractors' installments of the capital cost component of the Transportation Charge in 1981.

Under Amendment 2 of MWD's contract, 809 cfs of excess capacity was originally constructed in reaches of the West Branch at MWD's request. That capacity was reclassified as basic capacity of SWP Transportation Facilities under Amendment 7. MWD 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 MWD's contract requires that additional costs for modifications to the Santa Ana Pipeline (required for enlargement of Lake Perris) will be allocated to MWD and returned to the State through payments of the Transportation Charge. The additional costs to be repaid through MWD's capital cost component for the aqueduct reach from Devil Canyon Powerplant to Barton Road total about $6.7 million (see Bulletin 132-72, page 98).

Table B-10 presents the actual and projected annual capital costs of each aqueduct reach that will eventually be returned to the State, with interest, through contractors payments of the capital cost component of the Transportation Charge and payment of debt service under the Devil Canyon-Castaic contracts.

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 and Transportation Charges 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.

Table 1
Project Purpose 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 Hyatt and Thermalito powerplants and switchyards.
[b] Percentage indicated consists of 48.8 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.

Transportation and Devil Canyon-Castaic Contract Costs

Table B-11 shows the amounts of the actual and projected costs to be reimbursed through payments of the minimum OMP&R component of the Transportation Charge and allocated operating costs under the Devil Canyon-Castaic contract. The table includes the following seven types of operating costs incurred annually that 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;
5. Portions of the power and replacement costs of all up-aqueduct pumping plants and powerplants that are allocable to the annual conveyance of water lost to evaporation and seepage from

respective aqueduct reaches or placed into storage in respective reservoirs of the Project Transportation Facilities (after initial fill);

6. Credits, which offset those costs in (5) above, for deliveries drawn from reservoir storage; and

7. Escalation of projected operating costs at 5 percent per year for 1999, 2000, and 2001.

Table B-12 shows the portions of 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 the Table B-3 costs to derive the Table B-12 costs:

1. Part of the variable OMP&R costs of each plant is allocated to recreation. The allocation to recreation is in proportion to the quantity of water conveyed through each plant each year for delivery to onshore 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 respective 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. 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. The unit rate is equal to the variable OMP&R unit rate for the year the water is taken from storage.

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 is a summary of actual and projected capital and operating costs of the initial Project Conservation Facilities. These costs are reimbursed through payments by contractors under the Delta Water Charge, Oroville power sales, and Gianelli Generating Plant credits. Table B-13 also shows credits applied to the reimbursable capital costs of the Project Conservation Facilities according to negotiated settlements concerning incurred planning costs for the period from 1952 through 1978.

Project Water Charges

This section describes the redetermination of past and projected components of the Transportation Charge for annual revision of Tables C through G of each water supply contract. This section also describes the derivation of the unit Delta Water Rates and the Water System Revenue Bond Surcharge.

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 B-1.

Transportation Charges

The accumulation of allocated costs of each aqueduct reach to each contractor is the basis for the Transportation Charge components.

Table B-14 summarizes 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 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 MWD's Amendment 7, are included as negative capital costs in Table B-14 and Table C of MWD's Statement of Charges for 1999. Solano County Water Agency, Empire West Side Irrigation District, and Castaic Lake Water Agency also prepaid capital costs (see Table B-14 footnotes). Table B-14 includes the costs of the planned East Branch Extension to provide water service to San Bernardino Valley Municipal Water District and San Gorgonio Pass Water Agency.

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 summarizes capital cost components of the Transportation Charge for each contractor for each year of the project repayment period. By the year 2035, the capital cost components shown in Table B-15 will recover the costs shown in Table B-14, with interest at the project Interest Rate of 4.615 percent per annum and based on the amortization schedules included in Table 2.

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 summarizes the minimum OMP&R components of the Transportation Charge for each year of the project 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 in Table B-2 to the reach costs in Table B-11. Table B-16A excludes charges for Off-Aqueduct Power Facilities, which are included separately in Table B-16B. 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.

Prior to 1997, as part of operating agreements with the Department, Kern County Water Agency was

Table 2
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		[c]
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	[e]
Kern County Water Agency		
Agricultural Use	1968	[e]
Municipal and Industrial Use	1965	
Littlerock Creek Irrigation District	1964	
Metropolitan Water District of Southern California	1963	
Mojave Water Agency	1964	
Napa County Flood Control and Water Conservation District	1966	
Oak Flat Water District	1968	[e]
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	[d]
San Gorgonio Pass Water Agency	1963	[d]
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	
Tulare Lake Basin Water Conservation District	1968	[e]
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 and Butte County 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 the Coastal Stub were deferred until 1976.

billed for any additional operating costs caused by early installation of units in Las Perillas and Badger Hill Pumping Plants by Berrenda Mesa Water Storage District (see Bulletin 132-71, page 7). Under those agreements, a portion of minimum OMP&R costs of Reach 31A were assigned directly to KCWA, with the remaining reach costs allocated by application of the proportionate-use ratios shown in Table 3. The Department purchased Unit No. 6 at Las Perillas and Badger Hill pumping plants in early 1997 to provide pumping capacity for deliveries to Coastal Area contractors which began in 1997.

Table 3
Minimum OMP&R Costs of Reach 31A Assigned Directly to Kern County Water Agency

Year	*Direct Charges*
1969	*46,511*
1970	*46,302*
1971	*140,074*
1972	*95,017*
1973	*72,454*
1974	*100,692*
1975	*127,456*
1976	*138,504*
1977	*120,753*
1978	*157,652*
1979	*121,231*
1980	*150,728*
1981	*75,866*
1982	*82,805*
1983	*90,007*
1984	*107,468*
1985	*159,406*
1986	*137,241*
1987	*127,073*
1988	*130,924*
1989	*128,468*
1990	*138,234*
1991	*139,527*
1992	*185,370*
1993	*219,344*
1994	*364,196*
1995	*272,341*
1996	*322,123*
Total	***3,997,767***

Table B16-B summarizes 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.

Adopted October 1, 1979, the General Bond Resolution 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 4 summarizes Off-Aqueduct Power Facility charges and credits related to deliveries for 1998.

Table 4
Summary of Off-Aqueduct Power Facility Charges and Credits

1998 Charges	
Reid Gardner Powerplant	$71,767,483
Bottle Rock Powerplant	$15,220,345
South Geysers Powerplant	$7,056,973
Subtotal	*$94,044,801*
1998 Credits	
Power sales	$15,663,977
Miscellaneous water	
Alameda County - Zone 7	$132,585
Subtotal	*$15,796,562*
Grand Total	**$78,248,239**

Table 5 shows projected charges for Off-Aqueduct Power Facilities and an amount equal to 25 percent of annual bond service for 1999 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 Off-Aqueduct Power costs may be made in May of each year based on updated cost estimates and April revisions

Table 5
Projected Charges for Off-Aqueduct Power Facilities

Year	Total Annual Cost	25% Bond Service
1999	98,917,565	9,519,689
2000	97,468,639	9,507,543
2001	99,499,970	9,507,294
2002	99,223,407	9,511,981
2003	87,264,195	7,130,139
2004	87,257,701	7,138,840
2005	95,638,101	8,814,920
2006	95,691,700	8,825,639
2007	95,677,200	8,822,739
2008	114,471,278	12,581,555
2009	114,395,665	12,566,433
2010	114,325,024	12,558,305
2011	114,308,377	12,574,976
2012	114,607,644	12,634,829
2013	53,216,028	4,576,804
2014	19,061,610	3,784,922
2015	8,483,610	1,669,322
2016	5,312,860	1,062,572
2017	3,480,485	696,097
2018	3,500,110	700,022
2019	3,512,172	702,434
2020	3,541,673	708,335
2021	2,162,297	432,459
2022	2,167,704	433,541
2023	3,499,204	699,841
2024	3,498,641	699,728

in water delivery schedules. An additional adjustment is made the following year based on actual water deliveries and actual costs for the year.

The energy required to pump each contractor's water is calculated using the kilowatt-hour per acre-foot factors (shown in Table 6) for the pumping plants

Table 6
Kilowatt-Hour Per Acre-Foot Factors for Allocating Off-Aqueduct Power Facility Costs

	kWh per acre-foot [a]	
Pumping Plant	At Plant	Cumulative from Delta
Barker Slough	223	223
Cordelia-Benicia	434	657
Cordelia-Vallejo	178	835
Cordelia-Napa	563	786
Banks	296	296
South Bay (including Del Valle)	869	1,165
Dos Amigos	138	434
Buena Vista	242	676
Teerink	295	971
Chrisman	639	1,610
Edmonston	2,236	3,846
Pearblossom	703	4,549
Oso	280	4,126
Las Perillas	77	511
Badger Hill	200	711
Devil's Den	705	1,416
Bluestone	705	2,121
Polonio Pass	705	2,826

[a] Includes transmission losses

upstream from the delivery turnouts. The amounts include transmission losses.

Table B-17 presents a summary of actual and projected total variable OMP&R costs for each acre-foot of water conveyed through each aqueduct pumping plant and powerplant 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 from or through the reach to the contractor.

The data summarized in Table B-17 are derived by dividing the costs shown in Table B-3 by the quantities of water shown 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 type of service (see Bulletin 132-71, page 21, and Water Service Contractors Council Memo No. 593, July 10, 1970). Those costs are excluded from the unit charges shown in Table B-17. Peaking charges based on additional capacity ceased in 1983. Since 1984, costs are based on market energy rates. The amounts of extra peaking charges for additional power costs are shown in Table 7 and Table 8.

The unit rates shown in Table B-17 constitute the rates for the pumping plants and powerplants listed. The cumulative rates constitute the total rates, cumulative from the Sacramento-San Joaquin Delta, and are applicable to deliveries from or downstream of the pumping plants and powerplants. Extra peaking service costs are excluded.

Table B-18 shows the variable OMP&R components of the Transportation Charge for each contractor for each year of the project repayment period. Table B-18 is developed from the costs per acre-foot included in Table B-17 and the delivery quantities for 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 summarizes 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 presents the calculation of the Delta Water Rate for the initial Conservation Facilities applicable in 2000 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 4.615 percent based on Conservation Facility costs shown in Table B-13. That Delta Water Rate is used to compute projected Delta Water Charges under Article 53(i) for the contractors who have executed the Monterey Amendment. Included in Table B-20A is the Delta Water Rate for the two contractors who have not executed the Monterey Amendment (Plumas County and Empire).

Table B-20B shows each component of the 2000 Delta Water Rate from Table B-20A.

Table B-21 summarizes the annual Delta Water Charge for each contractor. The projected charges in Table B-21 are developed by multiplying the total rate per acre-foot, as shown in Table B-20A, by the amount of entitlement water for each contractor as shown in Table B-4.

Water System Revenue Bond Surcharge

Table B-22 summarizes the Water System Revenue Bond Surcharge to the Delta Water Charge and the Transportation capital cost component of each contractor. The surcharge shown in Table B-22 includes the financing costs of WSRB Series B through V. 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 signed that amendment.

Total Water Charges

Table B-23 summarizes 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 do not reflect past payments by contractors and are unadjusted for prior overpayments or underpayments.

Equivalent Total Water Charges

Table B-24 presents the Transportation Charge and Delta Water Charge in terms of the equivalent unit charge for each acre-foot of entitlement water now projected for delivery to the respective contractors.

These equivalent charges would provide the same principal sum at the end of the project repayment period as annual payments to be made as part of the Delta Water Charge and Transportation Charge, plus interest at the Project Interest Rate, if applied to each acre-foot of entitlement water delivered to date; all surplus water delivered prior to May 1, 1973; all interruptible water deliveries in 1994 and after; and all entitlement water now projected to be delivered during the remainder of the project repayment period (Table B-5B).

The equivalent unit Delta Water Charges included in Table B-24 are greater than those in Table B-20A because current projections of entitlement water service are less for most contractors than the amounts shown in Table A.

Equivalent Water Costs by Reach

Table B-25 presents a summary 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 extra service (such as for delivery of entitlements down-aqueduct from a contractor's turnout) and for wheeling service to entities other than the long-term water supply contractors.

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 delivered prior to May 1, 1973, and interruptible water deliveries in 1994 and after.

East Branch Enlargement Facility Charges

Table B-26 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:

- A reallocation of costs of constructing the present East Branch facilities between Alamo Powerplant and Silverwood Lake;
- A reallocation of costs of Silverwood Lake to reflect additional use as a result of East Branch Enlargement operation;
- Reallocation of costs of San Bernardino Tunnel to reflect redistribution of flow capacities necessary for the East Branch Enlargement Facilities; and
- Actual construction costs of the enlargement.

These costs will be recovered with interest from the seven Southern California water contractors participating in the enlargement, according to their amended water supply contracts (see Table 9).

Table B-27 lists the projected minimum OMP&R costs for each reach of the enlargement to be repaid by the seven contractors participating in the East Branch Enlargement. Currently, this table 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 B-28 shows each participating contractor's share of the estimated capital costs of the East Branch Enlargement shown in Table B-26.

Table B-29 shows the amounts of the annual capital cost components of the East Branch Enlargement

Table 7
Extra Peaking Charges for Additional Power, by Pumping Plant
(Dollars)

Year	Cordelia Napa	Cordelia Solano	Barker Slough	South Bay	Banks	Dos Amigos	Las Perillas and Badger Hill	Buena Vista	Teerink	Chrisman	Edmonston	Pearblossom	Oso	Total
1972	0	0	0	0	0	10,579	24,700	0	0	0	0	0	0	35,279
1973	0	0	0	0	0	0	6,016	0	0	0	0	0	0	6,016
1974	0	0	0	0	0	0	7,140	0	0	0	0	0	0	7,140
1975	0	0	0	0	0	494	6,397	0	0	0	0	0	0	6,891
1976	0	0	0	0	0	0	1,981	0	0	0	0	0	0	1,981
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	45,145	3,680	0	0	0	0	0	0	48,825
1979	0	0	0	0	0	0	3,306	0	0	0	0	0	0	3,306
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	12,126	0	0	0	0	0	0	0	12,126
1982	0	0	0	0	0	89,339	0	0	0	0	0	0	0	89,339
1983	0	0	0	35	7,535	3,506	144	0	0	0	0	0	0	11,220
1984	0	0	0	2,096	84,396	38,607	7,203	11,173	3,823	3,593	0	0	0	150,891
1985	0	0	0	1,480	19,612	8,841	763	4,488	4,412	8,929	28,353	0	0	76,878
1986	0	0	0	0	1,881	871	0	291	353	767	2,682	0	0	6,845
1987	0	0	0	606	17,475	7,998	1,161	2,295	1,806	3,460	11,058	0	0	45,859
1988	639	65	287	891	43,469	20,079	1,863	5,790	4,362	8,268	25,885	0	0	111,598
1989	2,491	966	1,483	71	40,249	18,641	1,935	3,398	1,530	2,056	3,794	0	0	76,614
1990	46	0	18	325	18,506	8,571	0	143	136	295	610	0	0	28,650
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	77	0	23	0	5,568	2,076	1,069	132	140	321	0	0	0	9,406
1993	0	681	889	4,483	123,080	54,741	0	8,898	5,458	10,900	35,068	11,139	0	255,337
1994	0	366	393	679	6,566	2,795	454	1,083	155	357	1,121	0	132	14,101
1995	0	0	0	1,717	24,464	9,422	27	1,865	3,475	782	1,104	400	0	43,256
1996	4	0	1	1,983	10,031	4,976	0	391	432	1,015	3,404	1,160	0	23,397
1997	0	1,780	2,152	3,107	337,357	165,774	1,753	34,604	12,296	15,910	21,028	0	0	595,761
1998	0	0	0	20,966	235,693	106,251	2,354	697	848	1,836	6,426	0	0	375,071
Total	**3,257**	**3,858**	**5,246**	**38,439**	**975,882**	**610,832**	**71,946**	**75,248**	**39,226**	**58,489**	**140,533**	**12,699**	**132**	**2,035,787**

Table 8
Extra Peaking Charges for Additional Power, by Contractor
(Dollars)

Year	Napa	Solano	Alameda - Zone 7	ACWD [a]	SCV WD [b]	Dudley Ridge	Empire West Side	Kern County	County of Kings	Oak Flat	Tulare	AVEK [c]	Castaic Lake	Coachella Valley	Desert Water Agency	LCID [d]	Palmdale	SGVM WD [e]	Total
1972	0	0	0	0	0	0	0	35,269	0	0	10	0	0	0	0	0	0	0	35,279
1973	0	0	0	0	0	0	0	6,016	0	0	0	0	0	0	0	0	0	0	6,016
1974	0	0	0	0	0	0	0	7,140	0	0	0	0	0	0	0	0	0	0	7,140
1975	0	0	0	0	0	0	0	6,891	0	0	0	0	0	0	0	0	0	0	6,891
1976	0	0	0	0	0	0	0	1,981	0	0	0	0	0	0	0	0	0	0	1,981
1977	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	2,035	0	44,484	42	0	0	2,264	0	0	0	0	0	0	48,825
1979	0	0	0	0	0	0	0	2,821	0	0	0	0	485	0	0	0	0	0	3,306
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	11,951	0	0	0	0	0	0	0	175	0	0	12,126
1982	0	0	0	0	0	2,173	0	80,945	0	0	0	4,671	1,128	0	0	0	0	422	89,339
1983	0	0	0	0	48	9,448	0	0	1,355	0	0	0	369	0	0	0	0	0	11,220
1984	0	0	0	0	2,874	0	0	144,021	281	809	0	0	2,906	0	0	0	0	0	150,891
1985	0	0	0	2,029	0	0	64	25,664	0	98	0	48,767	256	0	0	0	0	0	76,878
1986	0	0	0	0	0	0	0	0	0	13	2,219	4,613	0	0	0	0	0	0	6,845
1987	0	0	230	0	601	313	84	24,134	0	95	0	18,206	1,383	0	0	813	0	0	45,859
1988	891	99	662	561	0	1,853	1,404	58,539	0	72	2,368	44,523	626	0	0	0	0	0	111,598
1989	3,477	1,463	96	0	0	14	403	55,074	0	239	8,280	0	1,043	0	0	1,035	5,490	0	76,614
1990	64	0	445	0	0	0	0	27,092	0	0	0	0	0	0	0	77	972	0	28,650
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	100	0	0	0	0	0	32	7,552	653	0	0	0	1,069	0	0	0	0	0	9,406
1993	0	1,570	6,122	0	0	0	3,757	97,812	504	0	74,577	0	0	24,983	41,156	0	4,856	0	255,337
1994	0	759	896	0	0	0	7	9,933	0	0	0	0	2,450	0	0	56	0	0	14,101
1995	0	0	2,353	0	0	10,197	0	28,085	310	0	0	0	27	0	0	0	2,284	0	43,256
1996	5	0	81	2,612	0	334	205	4,552	969	0	7,809	0	0	0	0	0	3,598	3,232	23,397
1997	0	3,932	3,999	0	0	6,190	0	546,733	0	40	0	0	0	0	0	0	34,867	0	595,761
1998	0	0	19,666	8,442	0	22,631	1	312,626	0	651	0	0	0	0	0	0	11,054	0	375,071
Total	**4,537**	**7,823**	**34,550**	**13,644**	**3,523**	**55,188**	**5,957**	**1,539,315**	**4,114**	**2,017**	**95,263**	**123,044**	**11,742**	**24,983**	**41,156**	**2,156**	**63,121**	**3,654**	**2,035,787**

[a] Alameda County Water Agency
[b] Santa Clara Valley Water District
[c] Antelope Valley East Kern Water Agency
[d] Littlerock Creek Irrigation District
[e] San Gabriel Valley Municipal Water District

Table 9
Determination of Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities Among Participating Contractors

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

Share of Enlargement Capacity (cfs)

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*
18A		151	13	136	6		1,200	1,506
19		151	13	136	6		1,200	1,506
20A	35	151	13	136	6		1,200	1,541
20B	35	151	13	136	6		1,200	1,541
21	35	151	13	136			1,200	1,535
22A	35	151	13	136			1,200	1,535
22B		151	13	136			1,200	1,500
23B		184	67	212			1,200	1,663
23C		184	67				1,200	1,451
24		190	78				1,200	1,468
25		193	83			63	1,200	1,539
26A		193	83			63	1,200	1,539
26B							300	300

Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities (flow ratios)

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*
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

Transportation Charge for each participating contractor. This component consists of each contractor's allocated share of debt service on bonds sold to finance the enlargement.

Table B-30 shows the minimum OMP&R components of the East Branch Enlargement Transportation Charge for each participating contractor for each year of the project repayment period. The amounts shown in Table B-30 will recover the minimum OMP&R costs shown in Table B-27.

Table B-31 shows the annual East Branch Enlargement Transportation charges for each participating contractor (the sums of the corresponding amounts included in Tables B-29 and B-30).

Short-Term Agreements

The long-term water supply contractors and the Department have executed a short-term agreement that affects the contractors' charges. A 5-year agreement was executed in late 1997 between the Department and 16 Municipal and Industrial contractors, who agreed to pay their allocated shares of Municipal Water Quality Investigations costs. The MWQI charges under this agreement are included in the Transportation minimum OMP&R components shown in Table B-16A.

Nine contractors have executed short-term agreements to participate in the feasibility study for the American Basin conjunctive use program. The costs of the feasibility study are included in Table B-16A.

Table B-1

Factors for Distributing Reach Capital Costs Among Contractors

Reach No.	Reach Description	North Bay Area: Napa County FC&WCD	North Bay Area: Solano County Water Agency	South Bay Area: Alameda County FC&WCD, Zone 7	South Bay Area: Alameda County Water District	South Bay Area: Santa Clara Valley Water District	South Bay Area: Future Contractor	Total
	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			0.00954570	0.00872765	0.02079755	0.00342479	N/A

Reach No.	Reach Description	Central Coastal Area: San Luis Obispo County FC&WCD	Central Coastal Area: Santa Barbara County FC&WCD	Southern California Area: Antelope Valley-East Kern Water Agency	Southern California Area: Castaic Lake Water Agency	Southern California Area: Coachella Valley Water District	Southern California Area: Crestline-Lake Arrowhead Water Agency	Southern California Area: Desert Water Agency
	California Aqueduct							
1	Delta thru Bethany Reservoir	0.00532918	0.00983166	0.02938027	0.02549574	0.00528127	0.00133566	0.00870987
2A	Bethany Reservoir to Orestimba Creek	0.00557113	0.01027804	0.03071411	0.02661090	0.00551869	0.00139572	0.00910142
2B	Orestimba Creek to O'Neill Forebay	0.00557724	0.01028934	0.03074790	0.02666829	0.00552631	0.00139765	0.00911401
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557618	0.01028738	0.03074207	0.02667151	0.00552571	0.00139749	0.00911304
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557506	0.01028532	0.03073595	0.02667489	0.00552509	0.00139734	0.00911203
5	Panoche Creek to Five Points	0.00557366	0.01028276	0.03072831	0.02667912	0.00552432	0.00139713	0.00911076
6	Five Points to Arroyo Pasajero	0.00557156	0.01027888	0.03071673	0.02668551	0.00552315	0.00139683	0.00910882
7	Arroyo Pasajero to Kettleman City	0.00557088	0.01027763	0.03071302	0.02668757	0.00552278	0.00139673	0.00910820
8C	Kettleman City thru Milham Avenue	0.00557002	0.01027605	0.03070835	0.02669016	0.00552230	0.00139662	0.00910741
8D	Milham Avenue thru Avenal Gap	0.00568505	0.01048824	0.03134252	0.02726694	0.00563776	0.00142581	0.00929782
9	Avenal Gap thru Twisselman Road			0.03414122	0.02833782	0.00614691	0.00155458	0.01013751
10A	Twisselman Road thru Lost Hills			0.03468533	0.02881688	0.00624688	0.00157985	0.01030235
11B	Lost Hills to 7th Standard Road			0.03807979	0.03177799	0.00686848	0.00173705	0.01132748
12D	7th Standard Road thru Elk Hills Road			0.04001849	0.03348105	0.00722437	0.00182705	0.01191438
12E	Elk Hills Road thru Tupman Road			0.04007186	0.03354074	0.00723510	0.00182975	0.01193209
13B	Tupman Road to Buena Vista Pumping Plant			0.04344838	0.03647884	0.00785288	0.00198597	0.01295092
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04560710	0.03818094	0.00825001	0.00208640	0.01360585
14B	Santiago Creek thru Old River Road			0.04628801	0.03427416	0.00837834	0.00211885	0.01381751
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04752003	0.03301579	0.00860739	0.00217679	0.01419523
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04824184	0.03351724	0.00874143	0.00221067	0.01441624
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.04991271	0.03467803	0.00905023	0.00228876	0.01492550
17E	Edmonston Pumping Plant to Porter Tunnel			0.05199923	0.03612757	0.00943653	0.00238644	0.01556257
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05210717	0.03620255	0.00945622	0.00239142	0.01559505
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.				0.05742824			
29F	Oso Pumping Plant thru Quail Embankment				0.05742743			
29G	Quail Embankment thru Warne Powerplant				0.05742327			
29H	Pyramid Dam and Lake				0.03349572			
29J	Pyramid Lake thru Castaic Powerplant				0.05740996			
30	Castaic Dam and Lake				0.03248607			
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

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	0.01707360	0.00088657	0.00254651	0.02741046	0.28682043	0.00090677	0.00167082	0.03504129
2A	0.01780590	0.00092459	0.00266213	0.02863492	0.29913327	0.00094729	0.00174244	0.03654420
2B	0.01785393	0.00092708	0.00266504	0.02867969	0.29993292	0.00094877		0.03664281
3	0.01785891	0.00092733	0.00266453	0.02867816	0.30001449	0.00094873		0.03665304
4	0.01786415	0.00092761	0.00266398	0.02867654	0.30010024	0.00094867		0.03666380
5	0.01787069	0.00092795	0.00266332	0.02867452	0.30020731	0.00094860		0.03667724
6	0.01788058	0.00092847	0.00266231	0.02867148	0.30036933	0.00094849		0.03669756
7	0.01788375	0.00092864	0.00266198	0.02867050	0.30042128	0.00094845		0.03670408
8C	0.01788774	0.00092885	0.00266156	0.02866925	0.30048686	0.00094840		0.03671232
8D	0.01828303		0.00271652	0.02927336	0.30712044			0.01820382
9				0.03193609	0.30924202			
10A				0.03246206	0.29814762			
11B				0.03572620	0.22902201			
12D				0.03759781	0.18950480			
12E				0.03765726	0.18837693			
13B				0.01447292	0.14606598			
14A				0.00615164	0.11264558			
14B				0.00624976	0.10376157			
14C				0.00642344	0.08194589			
15A				0.00652498	0.06792947			
16A				0.00675829	0.03551536			
17E				0.00207367				
31A			0.05046240		0.48227699			

Reach No.	Southern California Area (Continued)								Total
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District	San Gorgonio Pass Water Agency	Metropolitan Water District of Southern California	Ventura County Flood Control District	
1	0.00049165	0.01822198	0.00368997	0.02362004	0.00650119	0.00398245	0.43898846	0.00428847	1.00000000
2A	0.00051397	0.01903308	0.00385749	0.02468196	0.00679450	0.00416149	0.45888958	0.00448318	1.00000000
2B	0.00051453	0.01906476	0.00386173	0.02471601	0.00680319	0.00416724	0.45941345	0.00448811	1.00000000
3	0.00051442	0.01906431	0.00386101	0.02471336	0.00680227	0.00416679	0.45933201	0.00448726	1.00000000
4	0.00051433	0.01906384	0.00386023	0.02471058	0.00680129	0.00416631	0.45924638	0.00448637	1.00000000
5	0.00051419	0.01906323	0.00385926	0.02470711	0.00680007	0.00416573	0.45913946	0.00448526	1.00000000
6	0.00051399	0.01906233	0.00385781	0.02470185	0.00679823	0.00416485	0.45897767	0.00448357	1.00000000
7	0.00051392	0.01906204	0.00385735	0.02470017	0.00679763	0.00416457	0.45892580	0.00448303	1.00000000
8C	0.00051385	0.01906167	0.00385677	0.02469805	0.00679688	0.00416420	0.45886033	0.00448236	1.00000000
8D	0.00052445	0.01946510	0.00393643	0.02521438	0.00693837	0.00425127	0.46835377	0.00457492	1.00000000
9	0.00057127	0.01872733	0.00428793	0.02749132	0.00756244	0.00463516	0.51024500	0.00498340	1.00000000
10A	0.00058039	0.01902476	0.00435629	0.02793832	0.00768455	0.00471052	0.51840138	0.00506282	1.00000000
11B	0.00063720	0.02088128	0.00478264	0.03071802	0.00844464	0.00517917	0.56925981	0.00555824	1.00000000
12D	0.00066966	0.02194116	0.00502613	0.03230944	0.00887944	0.00544749	0.59831754	0.00584119	1.00000000
12E	0.00067056	0.02196984	0.00503283	0.03235739	0.00889215	0.00545558	0.59912893	0.00584899	1.00000000
13B	0.00072707	0.02381683	0.00545692	0.03512004	0.00964783	0.00592136	0.64971224	0.00634182	1.00000000
14A	0.00076321	0.02499654	0.00572808	0.03689591	0.01013267	0.00622079	0.68207839	0.00665689	1.00000000
14B	0.00077459	0.02536707	0.00581360	0.03746968	0.01028802	0.00631753	0.69232505	0.00675626	1.00000000
14C	0.00079521	0.02603909	0.00596837	0.03849382	0.01056661	0.00649020	0.71082607	0.00693607	1.00000000
15A	0.00080728	0.02643291	0.00605904	0.03909310	0.01072969	0.00659124	0.72166344	0.00704143	1.00000000
16A	0.00083523	0.02734527	0.00626892	0.04047392	0.01110607	0.00682406	0.74673234	0.00728531	1.00000000
17E	0.00087016	0.02848426	0.00653100	0.04220123	0.01157660	0.00711527	0.77804567	0.00758980	1.00000000
17F	0.00087197	0.02854333	0.00654456	0.04228931	0.01160072	0.00713013	0.77966201	0.00760556	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							0.92979116	0.01278060	1.00000000
29F							0.92979198	0.01278059	1.00000000
29G							0.92979606	0.01278067	1.00000000
29H							0.95753173	0.00897255	1.00000000
29J							0.92980918	0.01278086	1.00000000
30							0.95895422	0.00855971	1.00000000
31A		0.09318491							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 Water Agency	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			0.00954570	0.00872765	0.02079755	0.00342479	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	0.00532918	0.00983166	0.02938027	0.02549574	0.00528127	0.00133566	0.00870987
2A	Bethany Reservoir to Orestimba Creek	0.00557113	0.01027804	0.03071411	0.02661090	0.00551869	0.00139572	0.00910142
2B	Orestimba Creek to O'Neill Forebay	0.00557724	0.01028934	0.03074790	0.02666829	0.00552631	0.00139765	0.00911401
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557618	0.01028738	0.03074207	0.02667151	0.00552571	0.00139749	0.00911304
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557506	0.01028532	0.03073595	0.02667489	0.00552509	0.00139734	0.00911203
5	Panoche Creek to Five Points	0.00557366	0.01028276	0.03072831	0.02667912	0.00552432	0.00139713	0.00911076
6	Five Points to Arroyo Pasajero	0.00557156	0.01027888	0.03071673	0.02668551	0.00552315	0.00139683	0.00910882
7	Arroyo Pasajero to Kettleman City	0.00557088	0.01027763	0.03071302	0.02668757	0.00552278	0.00139673	0.00910820
8C	Kettleman City thru Milham Avenue	0.00551500	0.01017454	0.03040486	0.02635667	0.00546386	0.00138184	0.00901105
8D	Milham Avenue thru Avenal Gap	0.00562723	0.01038157	0.03102358	0.02691647	0.00557635	0.00141028	0.00919655
9	Avenal Gap thru Twisselman Road			0.03375126	0.02794686	0.00607180	0.00153558	0.01001366
10A	Twisselman Road thru Lost Hills			0.03427914	0.02840942	0.00616863	0.00156006	0.01017332
11B	Lost Hills to 7th Standard Road			0.03756601	0.03126225	0.00676948	0.00171201	0.01116423
12D	7th Standard Road thru Elk Hills Road			0.03943553	0.03289565	0.00711202	0.00179864	0.01172912
12E	Elk Hills Road thru Tupman Road			0.03948575	0.03295172	0.00712211	0.00180118	0.01174577
13B	Tupman Road to Buena Vista Pumping Plant			0.04273727	0.03576397	0.00771578	0.00195131	0.01272484
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04480429	0.03738100	0.00809519	0.00204725	0.01335055
14B	Santiago Creek thru Old River Road			0.04544621	0.03360862	0.00821597	0.00207779	0.01354974
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04661442	0.03238676	0.00843267	0.00213261	0.01390711
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04729898	0.03286233	0.00855950	0.00216466	0.01411623
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.04888329	0.03396301	0.00885159	0.00223853	0.01459793
17E	Edmonston Pumping Plant to Porter Tunnel			0.05085607	0.03533353	0.00921588	0.00233064	0.01519871
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05095894	0.03540500	0.00923460	0.00233538	0.01522959
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.			0.00296720	0.05726734			
29F	Oso Pumping Plant thru Quail Embankment			0.00296796	0.05726649			
29G	Quail Embankment thru Warne Powerplant				0.05742327			
29H	Pyramid Dam and Lake				0.03349572			
29J	Pyramid Lake thru Castaic Powerplant				0.05740996			
30	Castaic Dam and Lake				0.03248607			
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

Reach No.	San Joaquin Valley Area							
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San JoaquinValley	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
				Municipal and Industrial	Agricultural			
	California Aqueduct							
1	0.01707360	0.00088657	0.00254651	0.02741046	0.28682043	0.00090677	0.00167082	0.03504129
2A	0.01780590	0.00092459	0.00266213	0.02863492	0.29913327	0.00094729	0.00174244	0.03654420
2B	0.01785393	0.00092708	0.00266504	0.02867969	0.29993292	0.00094877		0.03664281
3	0.01785891	0.00092733	0.00266453	0.02867816	0.30001449	0.00094873		0.03665304
4	0.01786415	0.00092761	0.00266398	0.02867654	0.30010024	0.00094867		0.03666380
5	0.01787069	0.00092795	0.00266332	0.02867452	0.30020731	0.00094860		0.03667724
6	0.01788058	0.00092847	0.00266231	0.02867148	0.30036933	0.00094849		0.03669756
7	0.01788375	0.00092864	0.00266198	0.02867050	0.30042128	0.00094845		0.03670408
8C	0.01764046	0.00091601	0.00263529	0.02835306	0.29635062	0.00093793		0.03620473
8D	0.01802316		0.00268890	0.02894108	0.30277358			0.01794507
9				0.03152966	0.30433592			
10A				0.03203857	0.29330216			
11B				0.03519033	0.22476599			
12D				0.03698964	0.18571899			
12E				0.03704552	0.18459686			
13B				0.01421027	0.14280376			
14A				0.00603171	0.10994682			
14B				0.00612395	0.10120720			
14C				0.00628806	0.07984943			
15A				0.00638400	0.06615366			
16A				0.00660435	0.03454219			
17E				0.00202338				
31A			0.05046240		0.48227699			

Reach No.	Southern California Area (continued)								Total
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District	San Gorgonio Pass Water Agency	Metropolitan Water District of Southern California	Ventura County Flood Control District	
1	0.00049165	0.01822198	0.00368997	0.02362004	0.00650119	0.00398245	0.43898846	0.00428847	1.00000000
2A	0.00051397	0.01903308	0.00385749	0.02468196	0.00679450	0.00416149	0.45888958	0.00448318	1.00000000
2B	0.00051453	0.01906476	0.00386173	0.02471601	0.00680319	0.00416724	0.45941345	0.00448811	1.00000000
3	0.00051442	0.01906431	0.00386101	0.02471336	0.00680227	0.00416679	0.45933201	0.00448726	1.00000000
4	0.00051433	0.01906384	0.00386023	0.02471058	0.00680129	0.00416631	0.45924638	0.00448637	1.00000000
5	0.00051419	0.01906323	0.00385926	0.02470711	0.00680007	0.00416573	0.45913946	0.00448526	1.00000000
6	0.00051399	0.01906233	0.00385781	0.02470185	0.00679823	0.00416485	0.45897767	0.00448357	1.00000000
7	0.00051392	0.01906204	0.00385735	0.02470017	0.00679763	0.00416457	0.45892580	0.00448303	1.00000000
8C	0.00050877	0.01884668	0.00381864	0.02443682	0.00672668	0.00412016	0.46575826	0.00443807	1.00000000
8D	0.00051911	0.01923916	0.00389636	0.02493985	0.00686459	0.00420499	0.47530374	0.00452838	1.00000000
9	0.00056475	0.01851597	0.00423895	0.02715558	0.00747222	0.00457856	0.51736273	0.00492650	1.00000000
10A	0.00057359	0.01880462	0.00430526	0.02758854	0.00759055	0.00465155	0.52555104	0.00500355	1.00000000
11B	0.00062860	0.02060284	0.00471810	0.03027547	0.00832573	0.00510456	0.57643113	0.00548327	1.00000000
12D	0.00065990	0.02162524	0.00495290	0.03180723	0.00874451	0.00536282	0.60541169	0.00575612	1.00000000
12E	0.00066075	0.02165223	0.00495919	0.03185231	0.00875646	0.00537043	0.60623626	0.00576346	1.00000000
13B	0.00071517	0.02343149	0.00536758	0.03450718	0.00948319	0.00581804	0.65653210	0.00623805	1.00000000
14A	0.00074977	0.02456152	0.00562722	0.03620382	0.00994676	0.00610411	0.68861025	0.00653974	1.00000000
14B	0.00076050	0.02491094	0.00570785	0.03674380	0.01009304	0.00619516	0.69872581	0.00663342	1.00000000
14C	0.00078005	0.02554841	0.00585460	0.03771280	0.01035684	0.00635853	0.71697379	0.00680392	1.00000000
15A	0.00079149	0.02592206	0.00594059	0.03827982	0.01051126	0.00645413	0.72765744	0.00690385	1.00000000
16A	0.00081799	0.02678753	0.00613960	0.03958594	0.01086759	0.00667435	0.75231102	0.00713509	1.00000000
17E	0.00085102	0.02786492	0.00638739	0.04121489	0.01131173	0.00694899	0.78303986	0.00742299	1.00000000
17F	0.00085274	0.02792124	0.00640031	0.04129860	0.01133467	0.00696310	0.78462782	0.00743801	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							0.92702291	0.01274255	1.00000000
29F							0.92702302	0.01274253	1.00000000
29G							0.92979606	0.01278067	1.00000000
29H							0.95753173	0.00897255	1.00000000
29J							0.92980918	0.01278086	1.00000000
30							0.95895422	0.00855971	1.00000000
									1.00000000
31A		0.09318491							1.00000000
33A									1.00000000
34									1.00000000
35									1.00000000

Power Costs and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant

(Dollars)

	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
Calendar Year	Barker Slough Pumping Plant (1)	Cordelia Pumping Plant Solano (2)	Cordelia Pumping Plant Napa (a (3)	South Bay & Del Valle Pumping Plant (4)	Banks Pumping Plant (5)	Dos Amigos Pumping Plant (6)	Buena Vista Pumping Plant (7)	Teerink Pumping Plant (8)	Chrisman Pumping Plant (9)	Edmonston Pumping Plant (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	23,863	639,976	2,310,401	1,995,850	1,405,476	1,406,070	3,037,783	9,978,672
1982	0	0	12,078	484,808	3,733,096	1,475,761	1,352,080	1,404,999	2,824,112	9,870,450
1983	0	0	2,339	77,395	1,516,704	396,993	439,023	420,209	754,464	2,264,838
1984	0	0	4,805	290,305	1,728,490	906,542	766,615	711,255	1,315,605	4,078,503
1985	0	0	10,219	456,058	3,254,817	1,723,452	1,608,668	1,652,472	3,370,432	11,267,338
1986	0	0	15,483	827,079	7,605,228	2,725,380	2,567,940	2,626,240	5,451,551	18,478,816
1987	0	0	27,223	901,077	4,781,909	2,592,289	2,300,620	2,327,407	4,613,035	15,153,733
1988	18,124	19,928	23,867	932,437	5,674,979	2,688,421	2,644,129	2,682,123	5,328,491	17,534,702
1989	30,766	45,757	26,494	1,210,454	11,581,960	4,045,787	4,074,199	4,146,008	8,701,460	28,990,578
1990	53,483	67,109	40,792	1,881,233	9,522,419	4,754,908	5,990,653	6,327,963	14,254,888	50,153,435
1991	11,649	11,311	6,140	365,812	3,463,556	723,166	1,263,666	1,445,688	3,363,787	12,018,916
1992	14,492	13,069	9,397	327,394	3,054,283	1,239,240	1,333,078	1,409,026	2,839,879	9,387,725
1993	(12,341)	(8,753)	(5,395)	(159,909)	438,107	315,990	(128,341)	(112,334)	(616,582)	(2,718,305)
1994	54,398	39,617	29,104	822,959	4,909,777	2,516,028	2,644,854	2,712,273	5,723,350	19,525,116
1995	20,674	20,621	11,791	253,324	4,500,118	1,643,124	1,084,110	1,033,783	2,084,275	7,020,589
1996	59,451	47,288	23,483	644,295	10,067,292	4,142,043	2,679,105	2,568,794	5,409,964	18,843,032
1997	69,747	52,941	21,957	964,893	7,604,385	3,056,834	2,839,772	2,775,873	6,191,152	21,971,698
1998	(10,499)	(10,845)	(4,413)	(129,970)	575,003	(301,877)	(250,973)	(178,965)	(452,886)	(1,519,762)
1999	179,208	110,931	110,589	1,709,988	12,824,878	5,640,875	5,954,558	6,721,532	14,159,692	49,946,066
2000	147,603	107,316	108,479	2,521,817	18,925,216	7,478,086	8,545,096	9,734,354	20,593,057	72,744,250
2001	159,502	113,756	120,733	2,669,772	20,226,989	7,901,506	9,007,207	10,257,697	21,695,389	76,656,891
2002	152,399	131,638	156,408	2,208,189	17,812,477	6,800,012	7,529,907	7,210,628	16,853,897	63,168,910
2003	167,988	142,593	173,256	2,421,683	16,548,546	7,615,637	8,600,766	8,268,454	19,354,455	72,585,221
2004	173,600	167,180	178,340	2,505,206	19,986,501	7,977,793	9,250,470	8,902,389	20,929,392	78,296,408
2005	167,977	160,352	174,948	2,402,884	19,961,022	7,975,284	9,448,536	9,132,315	21,498,243	80,491,589
2006	153,643	145,508	161,793	2,180,445	15,373,178	7,012,455	8,199,012	7,900,599	18,581,494	69,530,055
2007	158,218	148,720	168,442	2,228,579	18,808,079	7,388,413	8,782,669	8,489,875	19,986,948	74,835,243
2008	161,670	150,809	174,048	2,259,875	18,238,389	7,532,616	8,976,352	8,681,757	20,441,597	76,545,259
2009	165,343	153,013	179,789	2,292,914	18,656,313	7,740,455	9,277,833	8,984,060	21,161,212	79,258,197
2010	160,367	147,269	176,204	2,206,835	17,746,299	7,515,663	9,044,640	8,765,412	20,651,321	77,360,788
2011	172,039	156,784	190,990	2,349,430	19,883,611	8,061,102	9,733,123	9,439,081	22,243,073	83,334,255
2012	175,270	158,522	196,576	2,375,465	18,761,883	8,200,898	9,928,950	9,634,331	22,706,960	85,081,240
2013	189,474	170,297	214,226	2,551,909	22,197,982	8,893,374	10,810,312	10,498,265	24,749,240	92,748,402
2014	211,636	188,596	242,011	2,826,125	23,417,234	9,931,437	12,116,651	11,775,426	27,766,249	104,069,198
2015	214,039	188,037	250,012	2,817,754	21,791,460	9,911,955	12,098,665	11,758,975	27,728,344	103,928,607
2016	211,584	183,571	251,998	2,750,815	24,064,181	9,833,191	12,083,862	11,760,660	27,743,601	104,012,978
2017	217,606	186,476	264,077	2,794,372	24,064,610	10,030,577	12,348,182	12,022,052	28,363,127	106,342,804
2018	236,560	200,295	292,931	3,001,438	25,654,845	10,811,812	13,328,792	12,980,447	30,627,001	114,837,013
2019	229,411	191,946	289,771	2,876,322	24,741,821	10,531,181	13,070,452	12,745,756	30,085,226	112,834,110
2020	228,061	188,618	293,380	2,826,467	22,657,788	10,319,411	12,792,979	12,472,353	29,437,894	110,401,598
2021	221,253	182,567	285,348	2,735,789	24,756,404	9,950,098	12,315,504	12,003,130	28,327,729	106,231,753
2022	240,958	198,827	310,761	2,979,441	25,983,587	10,924,498	13,565,625	13,230,079	31,229,578	117,128,369
2023	221,056	182,405	285,094	2,733,355	22,900,877	10,041,736	12,479,889	12,173,201	28,735,901	107,778,887
2024	230,971	190,586	297,880	2,855,943	23,809,783	10,519,039	13,086,164	12,767,105	30,139,781	113,048,693
2025	228,369	188,440	294,525	2,823,778	25,748,869	10,244,261	12,665,759	12,341,970	29,125,556	109,219,264
2026	232,409	191,772	299,735	2,873,728	25,444,660	10,659,673	13,298,760	12,981,664	30,651,626	114,980,490
2027	226,464	186,867	292,069	2,800,222	22,418,365	9,977,253	12,244,609	11,913,836	28,102,701	105,353,864
2028	236,454	195,110	304,952	2,923,741	24,356,079	10,951,153	13,716,101	13,399,173	31,644,443	118,722,042
2029	225,223	185,843	290,467	2,784,870	25,800,248	10,135,742	12,548,280	12,230,672	28,865,111	108,248,031
2030	219,950	181,492	283,667	2,719,675	23,804,290	10,005,850	12,442,634	12,138,130	28,654,372	107,475,557
2031	239,473	197,602	308,846	2,961,080	23,924,225	10,618,427	13,066,631	12,720,434	30,010,205	112,516,439
2032	237,597	196,054	306,426	2,937,877	24,507,800	11,033,550	13,833,553	13,516,732	31,923,898	119,775,145
2033	217,711	179,644	280,780	2,691,988	24,787,130	9,784,427	12,107,011	11,799,245	27,846,069	104,424,407
2034	230,210	189,958	296,899	2,846,533	24,414,061	10,397,077	12,891,323	12,568,591	29,665,406	111,255,420
2035	236,819	195,411	305,423	2,928,260	25,676,590	10,909,716	13,634,632	13,314,104	31,439,726	117,944,495
Total	7,788,059	6,632,848	9,293,622	115,251,175	915,692,760	384,545,242	455,405,107	448,279,957	1,038,865,872	3,853,141,047

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 Costs and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant

(Dollars)

Calendar Year	California Aqueduct (continued)									
	Reach 18A	Reach 22B	Reach 23	Reach 26A	Reach 29A	Reach 29G	Reach 29J	Reach 31A	Reach 33A	
	Alamo Powerplant (11)	Pearblossom Pumping Plant (12)	Mojave Siphon Powerplant (13)	Devil Canyon Powerplant (14)	Oso Pumping Plant (15)	Warne Powerplant (16)	Castaic Powerplant (17)	Las Perillas and Badger Hill Pumping Plants (18)	Devil's Den, Bluestone and Polonio Pass Pumping Plants (19)	Grand Total (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	(4,833,994)	170,688	0	(1,510,136)	182,996	0	10,479,294
1981	0	2,188,419	0	(3,778,566)	525,378	0	(2,870,524)	189,573	0	17,052,371
1982	0	1,713,093	0	(3,149,352)	626,252	(973,898)	(3,476,126)	182,427	0	16,079,780
1983	0	377,472	0	(5,825,658)	207,352	(1,314,420)	(3,904,598)	18,939	0	(4,568,948)
1984	0	717,462	0	(7,750,411)	376,668	(2,285,362)	(10,016,553)	117,778	0	(9,038,298)
1985	0	1,255,854	0	(10,504,140)	1,096,809	(8,476,552)	(20,000,244)	156,736	0	(13,128,081)
1986	(1,080,970)	2,612,113	0	(12,055,478)	1,385,497	(6,269,528)	(11,462,662)	317,622	0	13,744,311
1987	(1,032,723)	1,925,211	0	(10,783,111)	1,384,936	(6,701,992)	(11,630,562)	266,826	0	6,125,878
1988	(772,740)	2,509,691	0	(14,655,187)	1,501,869	(7,384,337)	(12,677,211)	237,254	0	6,306,540
1989	(772,111)	4,308,633	0	(18,944,080)	2,139,587	(8,713,183)	(14,657,167)	309,558	0	26,524,700
1990	(845,641)	6,810,999	0	(21,336,948)	3,032,478	(11,692,826)	(19,863,014)	463,112	0	49,615,043
1991	(351,262)	1,306,131	0	(5,781,948)	778,907	(5,250,121)	(8,731,129)	17,507	0	4,661,776
1992	(974,167)	1,220,288	0	(9,797,312)	786,572	(5,917,501)	(9,599,206)	111,796	0	(4,541,947)
1993	(60,506)	(273,670)	0	(7,861,479)	75,154	(4,547,338)	(9,752,152)	(116,569)	0	(25,544,423)
1994	(64,368)	2,648,615	0	(12,005,935)	1,309,512	(6,185,860)	(10,867,044)	226,463	0	14,038,859
1995	(1,275,628)	1,042,580	0	(10,169,650)	369,428	(3,311,559)	(6,970,633)	251,589	0	(2,391,464)
1996	(2,936,039)	2,828,202	(941,959)	(13,045,281)	1,045,886	(5,003,908)	(8,969,945)	320,104	0	17,781,807
1997	(2,876,697)	3,421,048	(1,932,337)	(13,519,660)	987,499	(4,805,745)	(8,309,122)	321,813	208,841	19,044,892
1998	(2,244,105)	(329,089)	(1,385,473)	(10,955,475)	(59,320)	(1,888,975)	(4,963,075)	(38,615)	(99,464)	(24,248,778)
1999	(5,226,400)	10,285,526	(7,582,000)	(31,432,500)	1,460,438	(5,695,000)	(10,379,000)	522,696	1,876,776	51,188,853
2000	(5,466,100)	13,673,033	(8,024,000)	(33,147,500)	2,772,131	(8,625,000)	(15,381,500)	794,400	2,350,692	89,851,430
2001	(5,372,100)	14,468,210	(8,024,000)	(33,092,500)	2,889,497	(8,467,500)	(15,139,000)	842,072	2,491,755	99,405,876
2002	(5,180,152)	11,816,505	(6,303,668)	(29,758,350)	2,260,670	(8,731,500)	(13,784,550)	856,137	2,305,836	75,505,393
2003	(5,417,032)	14,106,574	(6,946,336)	(33,429,150)	2,444,683	(8,830,225)	(13,931,000)	927,388	2,497,734	87,301,235
2004	(5,181,562)	12,512,394	(6,260,828)	(29,245,225)	3,697,005	(12,945,575)	(20,598,150)	937,619	2,515,983	93,798,940
2005	(5,523,816)	12,853,156	(6,636,188)	(30,069,175)	3,854,776	(13,984,100)	(22,360,850)	882,509	2,413,221	92,842,683
2006	(5,278,523)	11,100,077	(5,961,764)	(29,844,175)	3,300,256	(13,240,450)	(21,127,500)	780,172	2,189,826	71,156,101
2007	(5,587,595)	12,080,324	(6,735,400)	(30,753,425)	3,536,905	(13,876,375)	(22,113,300)	774,373	2,238,165	80,558,858
2008	(5,593,376)	12,228,199	(6,625,648)	(30,749,350)	3,671,220	(14,177,425)	(22,624,900)	785,247	2,269,596	82,345,935
2009	(5,698,562)	12,709,730	(6,957,828)	(31,098,825)	3,797,138	(14,416,625)	(23,058,700)	796,728	2,302,779	86,244,964
2010	(5,758,346)	12,460,363	(6,843,928)	(31,792,075)	3,694,863	(14,543,975)	(23,310,850)	766,818	2,216,328	80,663,996
2011	(5,798,296)	13,352,036	(6,885,408)	(31,644,800)	4,014,587	(14,810,575)	(23,784,450)	816,366	2,359,536	93,182,484
2012	(5,818,647)	13,683,030	(6,950,620)	(32,167,250)	4,086,422	(14,929,500)	(23,946,350)	825,412	2,385,684	94,388,276
2013	(5,819,634)	14,794,003	(6,945,112)	(32,617,050)	4,511,183	(15,319,350)	(24,599,650)	886,721	2,562,885	110,477,477
2014	(6,023,285)	16,782,543	(7,548,272)	(32,418,975)	5,004,565	(15,329,625)	(24,648,250)	982,004	2,838,282	132,183,550
2015	(5,936,006)	16,652,847	(7,234,792)	(32,924,825)	5,038,997	(15,484,475)	(24,881,650)	979,096	2,829,876	129,726,916
2016	(5,999,409)	16,659,970	(7,696,648)	(33,001,650)	5,065,732	(15,953,900)	(25,610,350)	955,837	2,762,649	130,078,672
2017	(6,005,707)	17,027,916	(7,451,032)	(33,815,725)	5,186,442	(16,076,950)	(25,814,150)	970,972	2,806,392	133,462,041
2018	(6,071,037)	18,340,055	(7,119,464)	(33,923,800)	5,623,288	(16,239,350)	(26,048,600)	1,042,921	3,014,349	150,589,496
2019	(6,110,188)	18,048,783	(7,601,788)	(34,493,375)	5,535,798	(16,706,650)	(26,752,100)	999,447	2,888,697	143,404,620
2020	(6,071,037)	17,464,165	(7,402,684)	(34,124,500)	5,485,820	(16,915,400)	(26,984,050)	982,124	2,838,627	136,891,614
2021	(6,059,287)	16,895,640	(7,181,616)	(34,531,800)	5,239,937	(16,687,575)	(26,617,950)	950,615	2,747,559	131,765,098
2022	(6,079,168)	18,833,873	(7,582,476)	(34,908,450)	5,711,693	(16,673,100)	(26,648,350)	1,035,278	2,992,257	152,473,280
2023	(6,124,570)	17,246,012	(7,698,348)	(34,335,350)	5,289,730	(16,818,150)	(26,897,700)	949,769	2,745,114	131,888,908
2024	(6,066,149)	17,883,685	(7,555,276)	(34,602,175)	5,628,196	(17,115,800)	(27,379,500)	992,365	2,868,228	141,599,519
2025	(6,082,082)	17,526,695	(7,796,676)	(34,071,475)	5,325,923	(16,479,775)	(26,245,300)	981,189	2,835,927	138,875,217
2026	(6,120,763)	18,370,833	(8,136,336)	(34,760,900)	5,665,725	(17,139,125)	(27,393,500)	998,545	2,886,090	145,985,086
2027	(6,015,436)	17,233,199	(7,152,104)	(34,074,525)	4,993,293	(15,488,675)	(24,787,500)	973,004	2,812,269	132,009,775
2028	(6,051,297)	18,119,415	(7,528,144)	(34,512,250)	6,179,454	(18,216,700)	(29,297,700)	1,015,924	2,936,319	149,094,269
2029	(6,094,772)	17,586,098	(7,768,116)	(34,440,925)	5,202,363	(16,356,825)	(26,007,200)	967,670	2,796,852	137,199,632
2030	(6,111,081)	17,224,534	(7,479,864)	(34,585,250)	5,266,470	(16,833,825)	(26,898,950)	945,016	2,731,374	132,184,041
2031	(6,040,158)	18,435,673	(7,347,808)	(34,979,750)	5,329,943	(15,610,625)	(25,006,050)	1,028,898	2,973,819	145,347,304
2032	(6,118,554)	18,375,531	(7,791,984)	(34,049,025)	6,202,153	(18,187,400)	(29,263,650)	1,020,836	2,950,515	151,407,054
2033	(6,025,071)	16,840,748	(7,414,992)	(34,686,375)	5,063,325	(16,447,325)	(26,159,850)	935,396	2,703,567	128,927,835
2034	(6,052,190)	17,687,722	(7,367,528)	(34,487,075)	5,495,740	(16,774,625)	(26,828,500)	989,096	2,858,778	140,276,896
2035	(6,113,572)	18,956,355	(7,951,240)	(34,844,050)	5,775,765	(17,159,500)	(27,408,200)	1,017,494	2,940,858	151,799,086
Total	(231,377,917)	625,308,775	(273,749,685)	(1,432,512,354)	189,056,451	(638,011,655)	(1,075,511,492)	39,203,205	97,844,571	4,535,145,588

Table B-4

Annual Entitlements to Project Water

(Acre-Feet)

Calendar Year	North Bay Area			South Bay Area (a				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Authority (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (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	6,215	38,986	45,201
1998	11,710	38,710	50,420	46,000	42,000	100,000	188,000	6,215	38,986	45,201
1999	15,850	39,170	55,020	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2000	16,325	39,620	55,945	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2001	16,700	40,080	56,780	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2002	17,075	40,540	57,615	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2003	17,450	41,000	58,450	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2004	17,825	41,450	59,275	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2005	18,200	41,500	59,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2006	18,525	41,550	60,075	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2007	18,850	41,600	60,450	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2008	19,175	41,650	60,825	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2009	19,500	41,700	61,200	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2010	19,825	41,750	61,575	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2011	20,150	41,800	61,950	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2012	20,475	41,850	62,325	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2013	20,750	41,900	62,650	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2014	21,125	41,950	63,075	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2015	21,800	42,000	63,800	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2016	22,425	42,000	64,425	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2017	23,050	42,000	65,050	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2018	23,675	42,000	65,675	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	907,565	1,848,396	2,755,961	2,494,607	2,459,248	6,510,783	11,464,638	1,189,430	2,218,494	3,407,924

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 shown for 1967.
b) District's Table A quantities exclude amounts during the period 1968 through 1987 that were supplied by non-Project water.

Table B-4

Annual Entitlements to Project Water

(Acre-Feet)

Calendar Year	San Joaquin Valley Area								
			Kern County Water Agency						
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Municipal and Industrial (13)	Agricultural (14)	Total (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (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	3,770	9,548	867,118
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	820,246	933,646	3,700	5,100	97,200	1,091,946
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	28,850	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,313,450
1991	53,411	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,338,011
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	53,370	3,000	134,600	982,460	1,117,060	4,000	5,700	118,500	1,301,630
1997	53,370	3,000	134,600	978,130	1,112,730	4,000	5,700	118,500	1,297,300
1998	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
1999	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2000	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2001	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2002	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2003	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2004	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2005	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2006	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2007	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2008	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2009	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2010	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2011	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2012	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2013	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2014	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2015	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2016	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2017	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2018	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2019	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2020	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2021	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2022	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2023	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2024	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2025	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2026	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2027	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2028	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2029	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2030	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2031	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2032	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2033	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2034	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2035	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
Total	3,226,396	199,000	7,693,900	53,970,646	61,664,546	233,900	352,822	6,910,055	72,586,719

Table B-4

Annual Entitlements to Project Water

(Acre-Feet)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	*Castaic Lake Water Agency (21)*	*Coachella Valley Water District (22)*	*Crestline-Lake Arrowhead Water Agency (23)*	*Desert Water Agency (24)*	*Littlerock Creek Irrigation District (25)*	*Mojave Water Agency (26)*	*Palmdale Water District (27)*	*San Bernardino Valley Municipal Water District (28)*	*San Gabriel Valley Municipal Water District (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	75,800	17,300	102,600	28,800
1999	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2000	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2001	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2002	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2003	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2004	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2005	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2006	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2007	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2008	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2009	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2010	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2011	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2012	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2013	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2014	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2015	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2016	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2017	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2018	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2019	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2020	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2021	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2022	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2023	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2024	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2025	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2026	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2027	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2028	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2029	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2030	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2031	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2032	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2033	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2034	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2035	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
Total	7,330,000	4,545,098	1,286,111	321,556	2,107,600	127,210	3,760,043	983,720	5,909,177	1,641,322

Table B-4

Annual Entitlements to Project Water

(Acre-Feet)

Calendar Year	Southern California Area				Feather River Area					
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District Of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)	South Bay Area Future Contractor (38)	Grand Total (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	2,701,164
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	3,257,736
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	4,079,666
1991	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,080	11,880	0	4,126,567
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	0	2,011,500	20,000	2,492,900	9,600	1,200	1,300	12,100	0	4,111,341
1997	0	2,011,500	20,000	2,492,900	9,600	1,200	1,350	12,150	0	4,084,866
1998	0	2,011,500	20,000	2,517,900	9,600	1,200	1,400	12,200	0	4,086,021
1999	2,000	2,011,500	20,000	2,519,900	9,600	2,890	1,450	13,940	0	4,119,646
2000	3,000	2,011,500	20,000	2,561,900	9,600	2,890	1,510	14,000	0	4,121,631
2001	4,000	2,011,500	20,000	2,562,900	9,600	27,500	1,570	38,670	0	4,148,136
2002	4,000	2,011,500	20,000	2,562,900	9,600	27,500	1,630	38,730	0	4,149,031
2003	5,000	2,011,500	20,000	2,563,900	9,600	27,500	1,690	38,790	0	4,150,926
2004	6,000	2,011,500	20,000	2,564,900	9,600	27,500	1,750	38,850	0	4,152,811
2005	6,500	2,011,500	20,000	2,565,400	9,600	27,500	1,810	38,910	0	4,153,796
2006	7,000	2,011,500	20,000	2,565,900	9,600	27,500	1,880	38,980	0	4,154,741
2007	7,500	2,011,500	20,000	2,566,400	9,600	27,500	1,950	39,050	0	4,155,686
2008	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,020	39,120	0	4,165,931
2009	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,090	39,190	0	4,166,376
2010	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,160	39,260	0	4,166,821
2011	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,240	39,340	0	4,167,276
2012	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,320	39,420	0	4,167,731
2013	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,410	39,510	0	4,168,146
2014	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,500	39,600	0	4,168,661
2015	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,600	39,700	0	4,169,486
2016	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,170,211
2017	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,170,836
2018	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,171,461
2019	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,086
2020	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,686
2021	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2022	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2023	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2024	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2025	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2026	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2027	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2028	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2029	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2030	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2031	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2032	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2033	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2034	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
2035	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,172,786
Total	747,200	112,360,272	988,000	142,107,309	449,900	1,001,180	112,820	1,563,900	0	233,886,451

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	Grizzly Valley Pipeline PC FC&WCD (1)	North Bay Aqueduct				South Bay Aqueduct				
		Reach 1	Reach 3A	Reach 3B		Reach 1		Reach 2	Reach 4	Reach 5
		SCWA (2)	SCWA (3)	NC FC&WCD (a (4)	Total (5)	ACWD (6)	AC FC&WCD (7)	AC FC&WCD (8)	AC FC&WCD (9)	ACWD (10)
1962	0	0	0	0	0	8,412	141	353	0	0
1963	0	0	0	0	0	10,914	814	917	0	0
1964	0	0	0	0	0	19,238	248	1,425	0	0
1965	0	0	0	0	0	15,280	637	1,830	138	0
1966	0	0	0	0	0	0	2,475	2,537	499	0
1967	0	0	0	0	0	0	1,527	2,391	862	0
1968	0	0	0	1,214	1,214	0	1,608	3,799	721	0
1969	0	0	0	2,687	2,687	0	1,165	3,459	1,851	0
1970	70	0	0	3,618	3,618	0	1,345	4,558	3,182	0
1971	64	0	0	2,521	2,521	0	546	1,908	2,403	0
1972	505	0	0	3,647	3,647	0	1,066	4,605	2,041	1,489
1973	679	0	0	3,792	3,792	0	430	1,123	1,193	0
1974	648	0	0	4,870	4,870	0	177	0	975	0
1975	405	0	0	6,840	6,840	0	137	1,783	1,864	0
1976	382	0	0	7,122	7,122	0	265	7,204	3,384	0
1977	303	0	0	8,226	8,226	0	210	4,491	2,213	0
1978	278	0	0	6,034	6,034	0	422	2,426	3,754	0
1979	329	0	0	6,561	6,561	0	197	4,283	5,567	0
1980	295	0	0	6,707	6,707	0	77	3,883	6,686	1,508
1981	355	0	0	9,001	9,001	0	1,250	4,648	5,273	5,752
1982	305	0	0	1,213	1,213	0	473	3,043	4,406	0
1983	262	0	0	2,287	2,287	0	179	2,712	1,714	0
1984	272	0	0	2,923	2,923	0	165	4,219	2,219	0
1985	254	0	0	4,039	4,039	0	213	5,199	2,060	0
1986	317	1,400	0	3,519	4,919	0	200	6,052	2,062	0
1987	452	1,550	0	7,693	9,243	0	218	7,538	2,372	0
1988	523	0	9,725	5,392	15,117	0	222	8,302	4,681	0
1989	486	10	17,246	6,195	23,451	0	222	8,051	6,562	0
1990	548	3,275	15,856	6,940	26,071	0	256	8,160	8,347	0
1991	420	3,117	3,855	1,380	8,352	0	162	3,676	3,269	0
1992	485	5,553	9,220	4,001	18,774	0	217	5,177	2,188	0
1993	444	14,709	14,471	5,286	34,466	0	190	5,843	8,430	1,650
1994	492	10,343	14,913	6,792	32,048	0	132	4,482	5,427	0
1995	308	5,452	15,893	5,182	26,527	0	278	6,236	7,195	0
1996	360	12,930	17,069	4,893	34,892	0	277	6,151	5,119	0
1997	231	15,993	17,501	4,341	37,835	0	138	6,647	6,501	1,323
1998	0	11,562	18,204	5,359	35,125	0	106	3,748	2,493	0
1999	352	13,659	27,675	11,375	52,709	0	226	9,919	9,867	0
2000	1,510	21,650	29,370	16,325	67,345	0	235	9,445	10,701	0
2001	1,570	22,110	29,370	16,700	68,180	0	291	9,720	11,244	0
2002	1,630	22,490	29,450	17,075	69,015	0	291	10,608	10,048	0
2003	1,690	22,950	29,450	17,450	69,850	0	250	12,463	9,336	0
2004	1,786	21,450	31,400	17,825	70,675	0	321	10,938	12,269	0
2005	1,864	21,500	31,400	18,200	71,100	0	321	10,938	12,269	0
2006	1,942	21,550	31,400	18,525	71,475	0	321	10,938	12,269	0
2007	2,020	21,600	31,400	18,850	71,850	0	321	10,938	12,269	0
2008	2,080	21,650	31,400	19,175	72,225	0	321	10,938	12,269	0
2009	2,140	21,700	31,400	19,500	72,600	0	321	10,938	12,269	0
2010	2,200	21,750	31,400	19,825	72,975	0	321	10,938	12,269	0
2011	2,260	21,800	31,400	20,150	73,350	0	321	10,938	12,269	0
2012	2,320	21,850	31,400	20,475	73,725	0	321	10,938	12,269	0
2013	2,396	21,900	31,400	20,750	74,050	0	321	10,938	12,269	0
2014	2,472	21,950	31,400	21,125	74,475	0	321	10,938	12,269	0
2015	2,548	22,000	31,400	21,800	75,200	0	321	10,938	12,269	0
2016	2,624	22,000	31,400	22,425	75,825	0	321	10,938	12,269	0
2017	2,700	22,000	31,400	23,050	76,450	0	321	10,938	12,269	0
2018	2,700	22,000	31,400	23,675	77,075	0	321	10,938	12,269	0
2019	2,700	22,000	31,400	24,300	77,700	0	321	10,938	12,269	0
2020	2,700	22,000	31,400	24,900	78,300	0	321	10,938	12,269	0
2021	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2022	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2023	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2024	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2025	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2026	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2027	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2028	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2029	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2030	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2031	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2032	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2033	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2034	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
2035	2,700	22,000	31,400	25,000	78,400	0	321	10,938	12,269	0
Total	97,176	889,453	1,304,068	958,750	3,152,271	53,844	29,950	555,030	561,455	11,722

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

(Acre-Feet)

	South Bay Aqueduct (b (continued)						California Aqueduct							
							North San Joaquin Division			San Luis Division				
	Reach 5	Reach 6	Reach 7	Reach 8	Reach 9		Reach 2A			Reach 3		Reach 4		
Calendar Year	AC FC&WCD (11)	AC FC&WCD (12)	ACWD (13)	ACWD (14)	SCVWD (15)	Total (16)	OFWD (c (17)	TLBWSD (18)	SCVWD (19)	MWDSC (20)	DRWD (21)	KCWA (M&I) (22)	KCWA (Ag) (23)	DRWD (24)
1962	0	0	0	0	0	8,906	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	12,645	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	20,911	0	0	0	0	0	0	0	0
1965	0	0	1,127	0	15,014	34,026	0	0	0	0	0	0	0	0
1966	0	0	14,864	0	34,538	54,913	0	0	0	0	0	0	0	0
1967	0	0	12,882	0	39,101	56,763	0	0	0	0	0	0	0	0
1968	5	0	24,817	0	70,105	101,055	3,084	0	0	0	0	0	0	0
1969	160	0	813	0	62,264	69,712	3,016	0	0	0	0	0	0	0
1970	164	0	0	0	80,311	89,560	5,911	0	0	0	0	0	0	0
1971	160	0	5,961	0	87,606	98,584	7,212	0	0	0	0	0	0	0
1972	2,777	0	26,182	0	100,266	138,426	8,166	0	0	0	0	0	0	0
1973	229	0	2,521	0	88,582	94,078	3,214	0	0	0	0	0	0	0
1974	162	0	0	4	88,000	89,318	3,471	0	0	0	0	0	0	0
1975	120	714	393	593	88,000	93,604	3,576	0	0	0	0	0	0	0
1976	817	5,461	13,774	7,526	88,000	126,431	4,112	0	0	0	0	0	0	0
1977	524	5,206	11,284	7,556	76,220	107,704	1,472	0	0	0	0	0	0	0
1978	2,034	2,348	854	5,009	95,727	112,574	3,906	0	0	0	0	0	0	0
1979	3,937	5,341	3,430	7,444	91,991	122,190	6,149	0	0	0	0	0	0	0
1980	0	6,144	2,824	6,702	88,000	115,824	5,700	0	0	0	0	0	0	0
1981	1,157	7,262	7,595	8,570	88,000	129,507	4,300	0	0	0	0	0	0	0
1982	630	4,571	1,776	4,540	88,000	107,439	3,838	0	0	0	0	0	0	0
1983	50	111	0	3,157	86,733	94,656	3,822	0	0	0	0	0	0	0
1984	55	126	0	3,338	88,000	98,122	5,700	0	0	0	0	0	0	0
1985	63	7,537	11,203	7,813	88,000	122,088	5,433	0	0	0	0	0	0	0
1986	212	2,083	5,311	7,068	88,000	110,988	5,107	0	0	0	0	0	0	0
1987	285	12,993	15,488	9,902	88,000	136,796	5,625	0	0	0	0	0	0	0
1988	189	12,436	24,259	9,205	87,961	147,255	4,412	0	0	0	0	0	0	0
1989	418	10,974	17,340	8,702	90,000	142,269	6,091	300	0	0	602	0	12,647	1,898
1990	593	15,678	22,149	9,554	91,800	156,537	2,922	0	200	0	0	0	0	0
1991	359	1,945	9,155	3,493	28,200	50,259	141	0	0	0	0	0	0	0
1992	154	6,933	12,621	6,532	42,839	76,661	2,239	0	0	0	0	0	0	0
1993	5,964	13,208	1,792	6,829	62,065	105,971	2,858	0	0	0	0	0	0	0
1994	822	9,679	3,379	19,532	57,115	100,568	3,071	0	0	0	0	0	0	0
1995	955	15,427	21	17,772	28,756	76,640	5,169	0	0	0	0	0	3,500	14,446
1996	388	6,968	1,871	11,591	44,850	77,215	4,904	0	0	0	0	1,125	4,162	0
1997	1,582	12,654	1,876	10,864	60,601	102,186	5,238	0	0	11,100	0	0	0	0
1998	1,277	8,347	3,817	11,478	39,610	70,876	4,401	0	0	0	0	0	0	0
1999	1,922	22,713	11,948	25,829	60,000	142,424	5,700	0	0	0	0	0	0	0
2000	2,240	23,379	3,737	30,763	100,000	180,500	5,700	0	0	0	0	0	0	0
2001	2,420	22,325	15,736	18,764	100,000	180,500	5,700	0	0	0	0	0	0	0
2002	2,240	22,813	6,175	28,325	100,000	180,500	5,700	0	0	0	0	0	0	0
2003	800	23,151	3,932	33,048	100,000	182,980	5,700	0	0	0	0	0	0	0
2004	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2005	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2006	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2007	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2008	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2009	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2010	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2011	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2012	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2013	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2014	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2015	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2016	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2017	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2018	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2019	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2020	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2021	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2022	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2023	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2024	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2025	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2026	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2027	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2028	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2029	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2030	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2031	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2032	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2033	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2034	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2035	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
Total	136,984	906,511	607,387	1,371,023	6,102,255	10,336,161	345,160	300	200	11,100	602	1,125	20,309	16,344

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

(Acre-Feet)

	California Aqueduct (continued)														
	San Luis Division (continued)														
	Reach 4	Reach 5						Reach 6			Reach 7				
Calendar Year	TLBWSD (25)	CLWA (26)	TLBWSD (27)	KCWA (M&I) (28)	KCWA (Ag) (29)	DRWD (30)	OFWD (31)	KCWA (M&I) (32)	KCWA (Ag) (33)	TLBWSD (34)	KCWA (M&I) (35)	CLWA (36)	DRWD (37)	KCWA (Ag) (38)
1962	0	0	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	0	0
1964	0	0	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	0	0
1966	0	0	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	0	0
1968	0	0	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	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	18,831	0	0	0	0	8,260	0	0	0	0	5,262
1990	1,500	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	10,823	0	0	0	0	0	0	0	0	0
1993	0	10,190	0	28,200	27,200	1,624	2,000	0	31,200	0	18,157	0	0	10,043
1994	0	0	0	0	0	0	0	0	0	0	0	2,100	0	0
1995	0	0	0	21,776	0	0	0	0	3,932	0	10,875	0	0	20,595
1996	0	0	1,125	81,507 154,94	0	4,000	0	0	0	0	3,424	0	0	69,704
1997	0	0	9,080	0	0	3,500	0	0	0	0	27,079	0	0	32,463
1998	0	0	0	0	0	0	0	20,400	33,340	3,000	3,998	0	200	62,081
1999	0	0	0	0	0	0	0	0	40,776	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	South San Joaquin Division											
	Reach 8C						Reach 8D					
	KCWA (M&I) (39)	KCWA (Ag) (40)	DRWD (41)	TLBWSD (42)	EWSID (43)	CK (44)	KCWA (M&I) (45)	KCWA (Ag) (46)	DRWD (47)	CK (48)	SLOC FC&WCD (49)	TLBWSD (50)
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	25,100	1,978	900	0	0	26,360	0	0	0
1969	0	0	0	7,081	56	100	0	0	31,375	0	0	0
1970	0	0	0	0	3,942	0	0	0	40,407	0	0	3,408
1971	0	0	0	80,906	5,990	3,700	0	0	41,053	0	0	41,579
1972	0	0	0	144,843	5,795	1,400	0	0	42,443	0	0	113,550
1973	0	0	0	26,317	3,000	1,500	0	1,500	22,057	0	0	24,147
1974	0	0	0	32,603	3,000	1,500	0	0	33,390	0	0	39,686
1975	0	0	0	41,536	3,000	1,600	0	0	40,555	0	0	44,722
1976	0	0	0	26,595	3,000	1,600	0	0	41,421	0	0	32,216
1977	0	0	0	12,984	738	1,530	0	0	11,153	0	0	5,097
1978	0	0	0	3,934	454	2,070	0	0	51,747	0	0	8,119
1979	0	0	0	74,758	1,739	2,000	0	0	38,544	0	0	80,363
1980	0	0	0	35,140	894	2,200	0	0	41,000	0	0	34,104
1981	0	0	0	50,888	5,859	2,300	0	0	41,000	0	0	32,550
1982	0	0	0	4,405	361	1,536	0	0	41,000	214	0	14,146
1983	0	0	0	1,001	0	3,550	0	0	42,900	0	0	5
1984	0	0	0	3,677	0	3,100	0	0	45,100	0	0	2,066
1985	0	0	0	68,638	5,197	3,400	0	0	46,251	0	0	41,153
1986	0	0	0	40,017	1,170	3,700	0	0	50,249	0	0	39,338
1987	0	0	0	30,359	2,525	4,000	0	0	46,288	0	0	62,725
1988	0	0	0	47,831	3,775	4,000	0	0	47,994	0	0	48,035
1989	0	0	2,391	63,703	3,000	4,000	0	0	52,158	0	0	63,947
1990	0	0	0	23,504	1,279	2,000	0	161	36,296	0	0	32,066
1991	0	0	0	1,697	221	0	0	0	927	0	0	483
1992	0	0	280	15,982	1,354	1,806	0	0	12,667	0	0	30,746
1993	0	0	0	57,112	2,741	4,000	0	0	23,221	0	0	65,732
1994	0	0	0	21,510	1,666	2,116	0	1,726	28,793	0	0	40,852
1995	989	10,527	0	40,934	1,631	4,000	2,959	27,270	45,240	0	0	57,435
1996	0	1,500	95	84,130	1,868	4,000	0	1,455	52,722	0	100	148,745
1997	0	1,500	0	9,467	0	0	0	0	57,496	0	100	9,402
1998	0	5,864	90	8,956	542	15	0	15,136	49,435	0	0	8,811
1999	0	0	0	104,326	3,176	4,000	0	0	59,516	0	0	178,533
2000	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2001	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2002	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2003	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2004	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2005	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2006	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2007	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2008	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2009	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2010	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2011	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2012	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2013	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2014	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2015	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2016	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2017	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2018	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2019	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2020	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2021	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2022	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2023	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2024	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2025	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2026	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2027	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2028	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2029	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2030	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2031	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2032	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2033	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2034	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2035	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
Total	989	19,391	2,856	2,896,334	177,951	215,623	2,959	47,248	3,162,078	214	200	3,863,361

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)													
	South San Joaquin Division (continued)													
	Reach 9				Reach 10A								Reach 11B	
Calendar Year	DRWD (51)	KCWA (M&I) (52)	KCWA (Ag) (53)	TLBWSD (54)	MWDSC (55)	KCWA (M&I) (56)	TLBWSD (57)	AC FC&WCD (58)	KCWA (Ag) (59)	SCVWD (60)	ACWD (61)	TLBWSD (62)	KCWA (M&I) (63)	KCWA (Ag) (64)
1962	0	0	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	0	0
1964	0	0	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	0	0
1966	0	0	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	0	0
1968	0	0	30,951	0	0	0	0	0	0	0	0	0	0	24,776
1969	0	0	24,489	0	0	0	0	0	0	0	0	2,842	0	64,682
1970	0	0	46,114	1,855	0	0	0	0	158	0	0	4,315	0	72,279
1971	0	0	58,356	0	0	0	0	0	9,973	0	0	0	0	63,773
1972	0	0	75,464	0	0	0	0	0	5,876	0	0	0	0	72,358
1973	0	0	54,583	0	0	0	0	0	22,948	0	0	0	0	67,544
1974	0	0	63,814	0	0	10,019	0	0	22,719	0	0	0	0	87,476
1975	0	0	50,021	0	0	2,791	0	0	72,121	0	0	0	0	85,675
1976	0	0	53,465	0	0	74	0	0	50,444	0	0	0	0	85,067
1977	0	0	24,668	0	0	201	0	0	34,451	0	0	0	3,981	29,603
1978	0	0	72,231	0	0	0	0	0	161,889	0	0	0	0	88,753
1979	0	0	74,524	0	0	285	0	0	153,245	0	0	0	484	108,379
1980	0	0	79,946	0	0	3,780	0	0	131,836	0	0	0	3,112	103,207
1981	0	0	76,508	0	0	341	0	0	133,500	0	0	0	494	104,395
1982	0	0	76,877	0	0	4,700	0	0	164,832	0	0	0	798	99,081
1983	0	2,217	84,573	0	0	0	0	0	146,493	0	0	0	2,069	94,117
1984	0	4,100	85,732	0	0	6,910	0	0	150,302	0	0	0	2,349	124,819
1985	0	0	67,696	0	0	6,495	0	0	153,473	0	0	0	10,666	118,646
1986	0	0	79,943	0	0	5,065	0	0	198,099	0	0	0	8,673	124,836
1987	0	0	97,732	0	0	900	0	0	226,521	0	0	0	13,074	111,877
1988	0	1,100	83,858	0	0	8,229	0	0	213,795	0	0	0	13,509	114,031
1989	0	0	91,134	0	0	21,038	0	0	251,979	0	0	0	9,986	127,058
1990	0	0	83,108	0	0	25,189	0	0	47,472	0	0	0	9,319	104,107
1991	0	13,683	601	0	0	1,142	0	0	6,820	0	0	0	6,099	118
1992	0	28	40,183	0	0	3,685	0	0	89,390	0	0	0	7,419	35,093
1993	197	0	59,542	0	44,496	775	0	0	233,862	0	0	0	2,250	73,091
1994	0	0	44,994	0	0	5,227	0	0	126,792	0	0	0	3,506	71,202
1995	0	0	64,076	0	50,000	366	0	0	229,448	0	0	0	1,154	97,072
1996	0	2,236	89,291	0	95,000	6,666	0	0	199,854	45,000	6,200	0	1,185	96,250
1997	5,200	0	72,244	0	125,000	13,610	1,200	0	148,097	35,000	10,000	0	1,111	104,823
1998	0	0	59,111	0	39,500	2,559	0	5,970	164,304	23,800	3,780	0	1,311	72,646
1999	0	0	67,660	0	63,920	500	0	16,510	226,097	38,610	15,000	0	1,765	98,778
2000	0	0	80,166	0	0	500	0	0	314,610	0	7,500	0	2,000	130,508
2001	0	0	80,166	0	0	500	0	0	314,610	0	7,500	0	2,000	130,508
2002	0	0	80,166	0	0	500	0	0	314,610	0	7,500	0	2,000	130,508
2003	0	0	80,166	0	0	500	0	0	314,610	0	5,020	0	19,160	113,348
2004	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2005	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2006	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2007	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2008	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2009	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2010	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2011	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2012	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2013	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2014	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2015	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2016	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2017	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2018	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2019	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2020	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2021	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2022	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2023	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2024	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2025	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2026	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2027	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2028	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2029	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2030	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2031	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2032	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2033	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2034	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
2035	0	0	89,868	0	0	500	0	0	321,768	0	0	0	19,160	96,386
Total	5,397	23,364	5,229,929	1,855	417,916	148,547	1,200	22,480	15,331,806	142,410	62,500	7,157	742,594	6,314,836

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	South San Joaquin Division (continued)											
	Reach 12E				Reach 13B				Reach 14A		Reach 14B	
	KCWA (M&I) (65)	KCWA (Ag) (66)	DRWD (67)	MWDSC (68)	KCWA (M&I) (69)	MWDSC (70)	TLBWSD (71)	KCWA (Ag) (72)	KCWA (M&I) (73)	KCWA (Ag) (74)	KCWA (M&I) (75)	KCWA (Ag) (76)
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	9,279	0	0	0	0	0	4,891	0	0	0	3
1971	0	28,056	0	0	0	0	0	0	0	23,844	0	49,929
1972	0	62,342	0	0	0	0	0	17,388	0	26,621	0	77,034
1973	0	13,082	0	0	0	0	0	9,297	0	15,328	0	47,040
1974	2,651	4,248	0	0	8,038	0	0	4,246	0	7,794	0	32,356
1975	0	10,787	0	0	8,538	0	0	7,059	0	10,306	0	27,736
1976	37,519	20,555	0	0	5,626	0	0	8,855	0	268	0	35,296
1977	20,280	1,737	0	0	0	0	0	5,024	0	8,299	0	13,539
1978	47,133	15,011	0	0	21,773	0	0	7,601	0	34,029	0	72,351
1979	50,740	61,567	0	0	5,663	0	0	17,766	3,012	27,356	0	59,413
1980	32,039	22,252	0	0	0	0	0	22,515	4,312	16,876	0	40,513
1981	59,917	58,470	0	0	7,844	0	0	14,037	4,511	13,007	8	42,753
1982	36,139	75,587	0	0	0	0	0	25,553	5,373	22,602	184	57,739
1983	0	10,950	0	0	0	0	0	3,491	1,168	20,302	0	57,922
1984	63,941	39,929	0	0	12,117	0	0	26,178	137	35,369	10	79,179
1985	69,839	84,117	0	0	0	0	0	67,711	206	33,103	0	72,855
1986	62,109	51,540	0	0	0	0	0	66,551	180	26,384	0	70,864
1987	95,297	86,223	0	0	5,609	0	0	40,374	610	30,098	9	67,710
1988	86,390	123,249	0	0	9,298	0	0	47,167	604	32,796	4	75,983
1989	83,965	146,544	0	0	5,504	0	0	57,114	721	29,292	7	82,201
1990	82,164	38,973	0	0	7,645	0	0	20,423	673	26,800	13	81,076
1991	8,842	303	0	0	0	0	0	0	768	0	0	0
1992	47,181	57,048	0	0	789	0	0	17,449	673	16,238	464	41,143
1993	84,822	285,554	0	5,504	12,798	0	0	88,157	629	17,832	0	62,493
1994	66,188	77,839	0	0	2,494	0	0	33,148	2,513	16,760	3,000	54,011
1995	107,130	181,097	1,000	0	8,751	0	3,500	110,685	3	21,234	0	67,391
1996	89,257	134,138	4,131	0	28,063	0	0	64,849	0	26,978	0	85,936
1997	49,164	111,866	8,012	1,486	43,803	0	0	49,312	0	24,126	0	83,363
1998	26,048	98,329	5,925	24,234	29,444	5,500	0	42,978	0	16,152	0	62,948
1999	123,498	262,654	6,321	100,000	12,000	0	0	63,708	0	17,155	0	69,513
2000	102,700	105,946	0	50,000	12,000	0	0	41,800	0	3,983	0	63,381
2001	102,700	105,946	0	50,000	12,000	0	0	41,800	0	3,983	0	63,381
2002	102,700	105,946	0	0	12,000	0	0	41,800	0	3,983	0	63,381
2003	102,700	105,946	0	0	12,000	0	0	41,800	0	3,983	0	63,381
2004	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2005	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2006	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2007	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2008	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2009	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2010	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2011	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2012	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2013	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2014	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2015	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2016	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2017	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2018	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2019	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2020	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2021	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2022	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2023	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2024	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2025	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2026	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2027	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2028	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2029	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2030	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2031	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2032	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2033	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2034	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
2035	99,640	102,480	0	0	11,100	0	0	40,421	0	11,522	0	68,117
Total	5,031,533	5,876,470	25,389	231,224	638,997	5,500	3,500	2,404,199	26,093	981,585	3,699	4,103,558

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	South San Joaquin Division (continued)							Mojave Division				
	Reach 14C		Reach 15A		Reach 16A			Reach 18A	Reach 19			
	KCWA (M&I) (77)	KCWA (Ag) (78)	KCWA (M&I) (79)	KCWA (Ag) (80)	KCWA (M&I) (81)	KCWA (Ag) (82)	AVEKWA (83)	AVEKWA (84)	MWA (85)	MWA (86)	AVEKWA (87)	AVEKWA (88)
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	24,187	0	3,552	0	0	0	0	0	0	0	0
1972	0	35,016	0	6,064	0	4,768	0	0	0	0	0	0
1973	0	19,043	0	19,916	0	1,961	0	0	0	0	0	0
1974	0	12,601	0	18,000	3,000	1,564	0	0	0	0	0	1,223
1975	0	12,783	0	35,420	3,200	9,867	0	0	0	0	0	7,622
1976	0	9,005	0	39,551	3,500	11,667	0	3,808	0	0	0	23,063
1977	0	3,757	0	6,158	3,420	685	0	1,231	0	0	0	8,927
1978	0	24,542	0	31,148	7,989	1,655	0	1,321	0	0	0	36,333
1979	0	22,372	0	38,602	2,813	15,808	0	2,098	0	0	0	49,910
1980	0	19,953	0	37,817	2,700	16,145	0	2,610	0	0	0	61,534
1981	7	18,729	0	39,033	2,636	18,156	0	2,340	0	0	0	65,690
1982	0	26,479	0	47,782	1,289	17,209	0	1,669	0	0	0	41,127
1983	0	26,613	0	37,426	1,400	17,907	0	43	0	0	0	26,377
1984	2	34,996	0	49,848	1,338	24,246	0	90	0	0	0	22,462
1985	0	31,758	0	44,078	1,309	16,820	0	8	0	0	0	23,440
1986	0	34,566	0	42,461	1,213	15,559	0	8	0	0	0	16,898
1987	9	31,019	0	34,748	1,665	10,170	0	0	0	0	0	15,958
1988	0	37,166	2	41,992	1,913	8,999	0	0	0	0	0	13,471
1989	5	37,800	2	43,239	2,668	8,649	0	0	0	0	0	18,007
1990	9	34,174	6	36,347	2,819	8,608	0	0	0	0	0	17,281
1991	0	0	0	0	2,588	343	2,000	0	0	0	0	728
1992	0	18,084	0	24,243	2,087	8,275	0	0	0	0	0	7,238
1993	0	28,103	0	27,997	2,494	9,167	0	0	0	0	0	13,340
1994	1,000	22,624	0	29,511	3,011	13,877	0	0	0	0	0	19,122
1995	0	31,285	0	26,134	3,188	15,042	0	0	0	0	0	20,222
1996	0	38,879	0	36,186	2,573	18,142	0	0	0	0	0	23,919
1997	0	35,593	0	37,636	3,997	17,775	0	0	64	0	0	28,834
1998	0	24,354	0	29,839	3,751	17,118	0	0	1,345	0	0	23,811
1999	0	37,640	0	39,703	3,316	14,215	0	0	1,500	2,000	20,156	14,673
2000	0	40,383	0	43,929	4,400	7,424	0	0	1,500	0	30,636	2,664
2001	0	40,383	0	43,929	4,400	7,424	0	0	1,500	0	31,103	2,664
2002	0	40,383	0	43,929	4,400	7,424	0	0	1,500	0	31,600	2,664
2003	0	40,383	0	43,929	4,400	7,424	0	0	1,500	0	32,129	2,664
2004	0	35,565	0	38,179	4,200	14,171	0	0	0	0	30,877	2,174
2005	0	35,565	0	38,179	4,200	14,171	0	0	0	0	32,260	2,272
2006	0	35,565	0	38,179	4,200	14,171	0	0	0	0	33,711	2,376
2007	0	35,565	0	38,179	4,200	14,171	0	0	0	0	35,232	2,485
2008	0	35,565	0	38,179	4,200	14,171	0	0	0	0	36,815	2,593
2009	0	35,565	0	38,179	4,200	14,171	0	0	0	0	38,470	2,704
2010	0	35,565	0	38,179	4,200	14,171	0	0	0	0	40,210	2,826
2011	0	35,565	0	38,179	4,200	14,171	0	0	0	0	42,019	2,961
2012	0	35,565	0	38,179	4,200	14,171	0	0	0	0	43,905	3,093
2013	0	35,565	0	38,179	4,200	14,171	0	0	0	0	45,881	3,228
2014	0	35,565	0	38,179	4,200	14,171	0	0	0	0	47,945	3,378
2015	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2016	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2017	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2018	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2019	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2020	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2021	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2022	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2023	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2024	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2025	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2026	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2027	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2028	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2029	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2030	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2031	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2032	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2033	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2034	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
2035	0	35,565	0	38,179	4,200	14,171	0	0	0	0	48,401	3,410
Total	1,032	2,032,733	10	2,301,875	223,877	807,565	2,000	15,226	8,909	2,000	1,589,370	713,566

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)								
	Mojave Division (continued)								
	Reach 20A			Reach 20B		Reach 21		Reach 22A	Reach 22B
	PWD (89)	MWA (90)	AVEKWA (91)	PWD (92)	AVEKWA (93)	LCID (94)	PWD (95)	AVEKWA (96)	MWDSC(d (97)
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	0	0	0	0	0	338	0	0	0
1973	0	0	0	0	0	290	0	0	(14,800)
1974	0	0	0	0	0	400	0	0	(16,400)
1975	0	0	420	0	0	520	0	0	(18,000)
1976	0	0	471	0	416	589	0	0	(19,600)
1977	0	0	773	0	271	111	0	0	0
1978	0	0	5,549	0	934	208	0	0	(25,384)
1979	0	0	7,555	0	930	133	0	0	(25,063)
1980	0	0	7,605	0	655	191	0	3	(27,884)
1981	0	0	10,333	0	966	1,270	0	46	(31,105)
1982	0	0	7,313	0	8	0	0	174	(34,326)
1983	0	0	6,253	0	20	38	0	268	(37,547)
1984	0	0	9,558	0	2	1	0	550	(40,768)
1985	1,510	0	11,613	32	217	0	16	1,786	(43,989)
1986	3,041	0	13,808	45	0	163	10	1,735	(47,210)
1987	2,389	0	15,493	1,624	151	1,080	1,366	2,278	(50,931)
1988	366	0	17,117	1,261	281	419	143	3,210	(54,652)
1989	381	0	23,481	7,848	112	971	780	3,591	(58,373)
1990	282	0	25,843	8,292	84	1,747	34	3,988	(61,200)
1991	84	1,391	4,282	3,830	131	522	0	2,427	(18,360)
1992	185	1,310	18,518	3,850	650	251	0	3,859	(27,624)
1993	164	1,514	23,662	7,597	996	734	0	5,098	0
1994	299	1,399	25,250	8,119	124	1,098	0	4,657	0
1995	328	1,227	22,385	6,633	0	480	0	4,679	0
1996	354	1,316	26,979	11,080	0	494	0	5,458	0
1997	313	1,272	27,999	11,548	0	444	0	5,549	0
1998	195	0	25,985	8,557	0	404	0	4,468	0
1999	11,990	0	35,415	310	1,371	2,147	0	5,233	0
2000	17,300	0	98,320	0	1,445	2,300	0	5,335	0
2001	17,300	0	97,476	0	1,540	2,300	0	5,617	0
2002	17,300	0	96,581	0	1,638	2,300	0	5,917	0
2003	17,300	0	95,625	0	1,744	2,300	0	6,238	0
2004	351	1,500	96,929	16,949	1,715	2,300	0	6,705	0
2005	351	1,500	95,072	16,949	1,792	2,300	0	7,004	0
2006	351	1,500	93,123	16,949	1,871	2,300	0	7,319	0
2007	351	1,500	91,077	16,949	1,955	2,300	0	7,651	0
2008	351	1,500	88,954	16,949	2,045	2,300	0	7,993	0
2009	351	1,500	86,739	16,949	2,135	2,300	0	8,352	0
2010	351	1,500	84,401	16,949	2,233	2,300	0	8,730	0
2011	351	1,500	81,966	16,949	2,333	2,300	0	9,121	0
2012	351	1,500	79,429	16,949	2,438	2,300	0	9,535	0
2013	351	1,500	76,780	16,949	2,549	2,300	0	9,962	0
2014	351	1,500	74,006	16,949	2,662	2,300	0	10,409	0
2015	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2016	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2017	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2018	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2019	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2020	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2021	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2022	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2023	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2024	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2025	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2026	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2027	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2028	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2029	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2030	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2031	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2032	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2033	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2034	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2035	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
Total	102,313	102,313	102,313	102,313	102,313	102,313	102,313	102,313	(653,216)

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 1993 and after the exchange takes place in Reach 26A.

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)								
	Mojave Division (continued)								Santa Ana Division
	Reach 22B					Reach 23	Reach 24		Reach 26A
Calendar Year	CVWD(d (98)	AVEKWA(e (99)	SCWA (100)	DWA(d (101)	MWA (102)	MWA (103)	CLAWA (104)	MWA (105)	MWDSC(f (106)
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	0	0	0	0	55	0	464	0	0
1973	5,800	0	0	9,000	0	0	389	0	444
1974	6,400	0	0	10,000	0	14	627	0	84,981
1975	7,000	0	0	11,000	0	0	825	0	169,960
1976	7,600	0	0	12,000	0	0	1,002	0	215,312
1977	0	0	0	0	22	58	1,109	0	64,823
1978	10,084	0	0	15,300	0	0	1,209	0	297,708
1979	10,063	0	0	15,000	4,000	0	1,260	0	260,903
1980	10,884	0	0	17,000	4,000	0	1,239	0	300,345
1981	12,105	0	0	19,000	4,000	0	1,485	0	395,678
1982	13,326	0	0	21,000	10,500	0	1,238	0	215,123
1983	14,547	0	0	23,000	0	0	911	0	175,288
1984	15,768	0	0	25,000	0	0	1,128	0	122,311
1985	16,989	0	0	27,000	0	0	1,422	0	147,599
1986	18,210	0	0	29,000	0	0	1,506	0	215,265
1987	19,431	214	0	31,500	17	0	1,849	0	175,012
1988	20,652	0	0	34,000	9	0	2,006	0	247,101
1989	21,873	89	0	36,500	0	200	2,170	0	326,217
1990	23,100	10	0	38,100	0	0	1,827	0	399,387
1991	6,930	0	0	11,430	0	0	849	2,032	107,182
1992	10,427	0	0	17,197	42	0	519	9,334	219,524
1993	0	0	0	0	0	0	439	10,000	96,121
1994	0	0	0	0	14,634	0	785	819	192,979
1995	0	0	0	0	7,495	0	409	0	107,299
1996	0	0	0	0	6,111	0	485	0	73,438
1997	0	0	2,000	0	11,576	0	651	1,062	157,215
1998	0	0	0	0	4,580	0	187	0	37,770
1999	0	0	0	0	4,121	0	1,962	0	253,386
2000	0	0	0	0	18,500	0	5,800	0	597,250
2001	0	0	0	0	18,500	0	5,800	0	615,250
2002	0	0	0	0	18,500	0	5,800	0	527,250
2003	0	0	0	0	23,500	0	5,800	0	738,250
2004	0	0	0	0	23,500	0	5,800	0	527,999
2005	0	0	0	0	28,500	0	5,800	0	533,868
2006	0	0	0	0	33,500	0	5,800	0	539,732
2007	0	0	0	0	38,500	0	5,800	0	545,596
2008	0	0	0	0	43,500	0	5,800	0	551,455
2009	0	0	0	0	48,500	0	5,800	0	557,320
2010	0	0	0	0	53,500	0	5,800	0	563,189
2011	0	0	0	0	58,500	0	5,800	0	569,052
2012	0	0	0	0	63,500	0	5,800	0	574,920
2013	0	0	0	0	68,500	0	5,800	0	580,781
2014	0	0	0	0	74,300	0	5,800	0	586,645
2015	0	0	0	0	74,300	0	5,800	0	592,518
2016	0	0	0	0	74,300	0	5,800	0	598,382
2017	0	0	0	0	74,300	0	5,800	0	604,246
2018	0	0	0	0	74,300	0	5,800	0	610,113
2019	0	0	0	0	74,300	0	5,800	0	615,979
2020	0	0	0	0	74,300	0	5,800	0	666,837
2021	0	0	0	0	74,300	0	5,800	0	669,999
2022	0	0	0	0	74,300	0	5,800	0	669,999
2023	0	0	0	0	74,300	0	5,800	0	669,999
2024	0	0	0	0	74,300	0	5,800	0	669,999
2025	0	0	0	0	74,300	0	5,800	0	669,999
2026	0	0	0	0	74,300	0	5,800	0	669,999
2027	0	0	0	0	74,300	0	5,800	0	669,999
2028	0	0	0	0	74,300	0	5,800	0	669,999
2029	0	0	0	0	74,300	0	5,800	0	669,999
2030	0	0	0	0	74,300	0	5,800	0	669,999
2031	0	0	0	0	74,300	0	5,800	0	669,999
2032	0	0	0	0	74,300	0	5,800	0	669,999
2033	0	0	0	0	74,300	0	5,800	0	669,999
2034	0	0	0	0	74,300	0	5,800	0	669,999
2035	0	0	0	0	74,300	0	5,800	0	669,999
Total	251,189	313	2,000	402,027	2,244,762	272	238,752	23,247	27,404,988

e) 1988 advance entitlement.

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 1993 and after the exchange takes place in Reach 26A.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)											
	Santa Ana Division (continued)											
	Reach 26A					Reach 28G	Reach 28H			Reach 28J		
Calendar Year	SBVMWD(g (107)	SGVMWD (108)	SGPWA (109)	CVWD(f (110)	DWA(f (111)	MWDSC (112)	CVWD (113)	DWA (114)	MWDSC (115)	CVWD (116)	DWA (117)	MWDSC (118)
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	0	0	0	0	0	0
1972	1,275	0	0	0	0	0	0	0	0	0	0	0
1973	32,426	0	0	0	0	18,942	0	0	0	0	0	0
1974	16,605	612	0	0	0	0	0	0	0	0	0	0
1975	13,865	5,450	0	0	0	0	0	0	0	0	0	251
1976	12,273	6,071	0	0	0	0	0	0	55	0	0	2,000
1977	24,833	8,996	0	0	0	0	0	0	43	0	0	2,442
1978	4,055	7,771	0	0	0	0	0	0	48	0	0	64,054
1979	18	290	0	0	0	0	0	0	1,290	0	0	94,353
1980	0	1,085	0	0	0	0	0	0	3,013	0	0	91,532
1981	16,021	3,619	0	0	0	0	0	0	4,365	0	0	149,405
1982	8,409	12,599	0	0	0	0	0	0	3,961	0	0	155,629
1983	5,994	734	0	0	0	0	0	0	6,645	0	0	41,616
1984	5,556	7,656	0	0	0	0	0	0	109,743	0	0	5,672
1985	7,390	5,028	0	0	0	0	0	0	182,781	0	0	6,538
1986	6,421	9,454	0	0	0	0	0	0	131,439	0	0	30,071
1987	18,751	10,630	0	0	0	0	0	0	144,743	0	0	26,315
1988	21,386	8,948	0	0	0	0	0	0	199,641	0	0	22,209
1989	20,782	12,839	0	0	0	0	0	0	247,430	0	0	51,462
1990	18,831	16,649	0	0	0	0	0	0	257,796	0	0	36,060
1991	3,661	5,399	0	0	0	0	0	0	38,832	0	0	5,958
1992	3,358	7,908	0	0	0	0	0	0	85,341	0	0	12,223
1993	4,361	14,397	0	23,100	38,100	0	0	0	63,887	0	0	4,712
1994	9,135	15,230	0	14,102	23,257	0	0	0	134,262	0	0	4,725
1995	696	12,922	0	23,100	38,100	0	0	0	117,762	0	0	21,099
1996	6,064	15,989	0	48,241	102,622	0	13,328	0	144,906	650	0	12,418
1997	9,654	18,175	0	58,100	53,100	0	0	0	107,853	0	0	47,777
1998	1,878	9,310	0	78,100	58,100	0	5,428	8,862	77,473	4,839	1,027	50,411
1999	18,553	18,000	0	23,100	38,100	0	0	0	305,843	0	0	3,723
2000	102,600	28,800	1,000	23,100	38,100	0	0	0	378,000	0	0	3,600
2001	102,600	28,800	3,600	23,100	38,100	0	0	0	361,000	0	0	3,600
2002	102,600	28,800	3,600	23,100	38,100	0	0	0	310,000	0	0	3,600
2003	102,600	28,800	4,800	23,100	38,100	0	0	0	234,000	0	0	3,600
2004	102,600	28,800	4,800	23,100	38,100	0	0	0	275,883	0	0	24,190
2005	102,600	28,800	7,000	23,100	38,100	0	0	0	280,812	0	0	24,622
2006	102,600	28,800	7,500	23,100	38,100	0	0	0	285,744	0	0	25,056
2007	102,600	28,800	17,300	23,100	38,100	0	0	0	290,677	0	0	25,489
2008	102,600	28,800	17,300	23,100	38,100	0	0	0	295,614	0	0	25,922
2009	102,600	28,800	17,300	23,100	38,100	0	0	0	300,546	0	0	26,354
2010	102,600	28,800	17,300	23,100	38,100	0	0	0	305,476	0	0	26,786
2011	102,600	28,800	17,300	23,100	38,100	0	0	0	310,410	0	0	27,219
2012	102,600	28,800	17,300	23,100	38,100	0	0	0	315,341	0	0	27,652
2013	102,600	28,800	17,300	23,100	38,100	0	0	0	320,277	0	0	28,084
2014	102,600	28,800	17,300	23,100	38,100	0	0	0	325,211	0	0	28,516
2015	102,600	28,800	17,300	23,100	38,100	0	0	0	330,143	0	0	28,944
2016	102,600	28,800	17,300	23,100	38,100	0	0	0	335,076	0	0	29,376
2017	102,600	28,800	17,300	23,100	38,100	0	0	0	340,011	0	0	29,808
2018	102,600	28,800	17,300	23,100	38,100	0	0	0	344,943	0	0	30,240
2019	102,600	28,800	17,300	23,100	38,100	0	0	0	349,873	0	0	30,674
2020	102,600	28,800	17,300	23,100	38,100	0	0	0	309,810	0	0	31,106
2021	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2022	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2023	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2024	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2025	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2026	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2027	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2028	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2029	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2030	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2031	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2032	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2033	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2034	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
2035	102,600	28,800	17,300	23,100	38,100	0	0	0	312,413	0	0	31,340
Total	3,985,851	1,272,561	534,000	1,099,443	1,722,979	18,942	18,756	8,862	13,654,194	5,489	1,027	1,897,193

g) Includes 1,650 AF recaptured from groundwater storage in 1982, 10,000 AF in 1987, and 8,749 AF in 1988.
This water was stored under DWR's Groundwater Demonstration Program.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)									
	West Branch								Coastal Branch	
	Reach 29F	Reach 29H	Reach 30						Reach 31A	
Calendar Year	AVEKWA (119)	VCFCD (120)	CVWD (121)	DWA (122)	MWDSC(h (123)	VCFCD (124)	CLWA (125)	SBCFC&WCD (126)	KCWA (M&I) (127)	KCWA (Ag) (128)
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	71,657
1969	0	0	0	0	0	0	0	0	0	52,094
1970	0	0	0	0	0	0	0	0	0	71,910
1971	0	0	0	0	0	0	0	0	0	98,481
1972	53	0	0	0	71,938	0	0	0	0	107,850
1973	20	0	0	0	155,297	0	0	0	0	69,227
1974	36	0	0	0	209,136	0	0	0	0	68,474
1975	26	0	0	0	374,280	0	0	0	0	74,516
1976	24	0	0	0	420,684	0	0	0	0	78,358
1977	0	0	0	0	122,447	0	0	0	0	35,504
1978	0	0	0	0	171,139	0	0	0	0	81,242
1979	0	0	0	0	145,591	0	7	0	0	104,017
1980	0	0	0	0	164,721	0	1,210	0	0	97,497
1981	0	0	0	0	277,503	0	5,761	0	0	97,054
1982	0	0	0	0	351,362	0	9,516	0	0	83,076
1983	0	0	0	0	157,519	0	9,476	0	0	87,859
1984	0	0	0	0	260,624	0	11,477	0	0	119,098
1985	0	0	0	0	390,696	0	12,401	0	0	110,124
1986	0	0	0	0	379,275	0	13,928	0	0	118,298
1987	0	0	0	0	417,285	0	16,167	0	0	116,259
1988	0	0	0	0	488,265	0	18,904	0	0	109,435
1989	0	0	0	0	589,962	0	21,719	0	0	102,156
1990	0	4,836	0	0	764,380	0	22,139	0	0	103,362
1991	0	988	0	0	257,835	0	3,846	1,240	0	780
1992	0	0	0	0	420,849	0	14,812	0	0	73,748
1993	6	0	0	0	437,470	0	13,787	0	0	90,764
1994	0	0	0	0	475,900	0	14,919	0	200	77,536
1995	0	0	0	0	139,882	0	17,747	0	0	85,050
1996	0	0	0	0	267,618	0	18,448	0	0	100,578
1997	11	0	10,240	16,890	271,379	1,850	22,842	0	0	97,020
1998	7	0	0	0	187,277	1,850	19,782	0	0	86,879
1999	0	0	0	0	253,452	1,850	22,500	0	0	95,826
2000	0	3,150	0	0	543,150	6,850	82,500	0	0	93,000
2001	0	3,150	0	0	533,150	6,850	82,500	0	0	93,000
2002	0	3,150	0	0	498,150	6,850	82,500	0	0	93,000
2003	0	3,150	0	0	511,150	6,850	82,500	0	0	93,000
2004	0	6,300	0	0	770,078	13,700	82,500	0	0	93,653
2005	0	6,300	0	0	783,848	13,700	85,820	0	0	93,653
2006	0	6,300	0	0	797,618	13,700	90,303	0	0	93,653
2007	0	6,300	0	0	811,388	13,700	95,200	0	0	93,653
2008	0	6,300	0	0	825,159	13,700	95,200	0	0	93,653
2009	0	6,300	0	0	838,930	13,700	95,200	0	0	93,653
2010	0	6,300	0	0	852,699	13,700	95,200	0	0	93,653
2011	0	6,300	0	0	866,469	13,700	95,200	0	0	93,653
2012	0	6,300	0	0	880,237	13,700	95,200	0	0	93,653
2013	0	6,300	0	0	894,008	13,700	95,200	0	0	93,653
2014	0	6,300	0	0	907,778	13,700	95,200	0	0	93,653
2015	0	6,300	0	0	921,545	13,700	95,200	0	0	93,653
2016	0	6,300	0	0	935,316	13,700	95,200	0	0	93,653
2017	0	6,300	0	0	949,085	13,700	95,200	0	0	93,653
2018	0	6,300	0	0	962,854	13,700	95,200	0	0	93,653
2019	0	6,300	0	0	976,624	13,700	95,200	0	0	93,653
2020	0	6,300	0	0	990,397	13,700	95,200	0	0	93,653
2021	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2022	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2023	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2024	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2025	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2026	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2027	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2028	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2029	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2030	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2031	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2032	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2033	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2034	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
2035	0	6,300	0	0	997,748	13,700	95,200	0	0	93,653
Total	183	220,024	10,240	16,890	40,639,619	471,350	3,640,811	1,240	200	6,134,625

h) Deliveries exclude 6,171 AF of 1982 exchange water.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)						
	Coastal Branch (continued)						
	Reach 31A	Reach 33A	Reach 34	Reach 35			
Calendar Year	CLWA (129)	SLOCFC&WCD (130)	SLOCFC&WCD (131)	SLOCFC&WCD (132)	SBCFC&WCD (133)	Total (134)	Grand Total (135)
1962	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	56,763
1968	7,382	0	0	0	0	192,188	294,457
1969	9,970	0	0	0	0	195,705	268,104
1970	11,739	0	0	0	0	276,211	369,459
1971	12,490	0	0	0	0	553,081	654,250
1972	13,905	0	0	0	0	895,006	1,037,584
1973	9,418	0	0	0	0	638,930	737,479
1974	9,700	0	0	0	0	783,984	878,820
1975	10,700	0	0	0	0	1,129,728	1,230,577
1976	11,700	0	0	0	0	1,245,662	1,379,597
1977	5,075	0	0	0	0	465,442	581,675
1978	11,362	0	0	0	0	1,339,268	1,458,154
1979	19,138	0	0	0	0	1,537,075	1,666,155
1980	13,882	0	0	0	0	1,407,163	1,529,989
1981	12,700	0	0	0	0	1,779,479	1,918,342
1982	12,700	0	0	0	0	1,642,128	1,751,085
1983	12,659	0	0	0	0	1,089,626	1,186,831
1984	12,741	0	0	0	0	1,489,814	1,591,131
1985	12,099	0	0	0	0	1,863,544	1,989,925
1986	13,301	0	0	0	0	1,882,290	1,998,514
1987	11,821	0	0	0	0	1,984,569	2,131,060
1988	11,534	0	0	0	0	2,221,838	2,384,733
1989	14,645	0	0	0	0	2,686,838	2,853,044
1990	6,440	0	0	0	0	2,398,121	2,581,277
1991	716	0	0	0	0	489,489	548,520
1992	5,887	0	0	0	0	1,374,775	1,470,695
1993	4,157	0	0	0	0	2,178,447	2,319,328
1994	9,422	0	0	0	0	1,727,504	1,860,612
1995	9,486	0	0	0	0	1,926,835	2,030,310
1996	14,052	0	0	0	0	2,429,928	2,542,395
1997	4,870	0	1,099	0	7,439	2,280,609	2,420,861
1998	314	0	3,592	0	18,618	1,696,919	1,802,920
1999	9,500	0	3,836	0	27,167	2,850,304	3,045,789
2000	12,700	0	25,000	0	45,486	3,363,886	3,613,241
2001	12,700	0	25,000	0	45,486	3,357,486	3,607,736
2002	12,700	0	25,000	0	45,486	3,133,486	3,384,631
2003	12,700	0	25,000	0	45,486	3,285,206	3,539,726
2004	12,700	0	0	25,000	45,486	3,401,336	3,661,797
2005	9,380	0	0	25,000	45,486	3,433,536	3,694,500
2006	4,897	0	0	25,000	45,486	3,464,036	3,725,453
2007	0	0	0	25,000	45,486	3,503,836	3,765,706
2008	0	0	0	25,000	45,486	3,533,836	3,796,141
2009	0	0	0	25,000	45,486	3,563,836	3,826,576
2010	0	0	0	25,000	45,486	3,593,836	3,857,011
2011	0	0	0	25,000	45,486	3,623,836	3,887,446
2012	0	0	0	25,000	45,486	3,653,836	3,917,881
2013	0	0	0	25,000	45,486	3,683,836	3,948,282
2014	0	0	0	25,000	45,486	3,714,636	3,979,583
2015	0	0	0	25,000	45,486	3,739,636	4,005,384
2016	0	0	0	25,000	45,486	3,764,636	4,031,085
2017	0	0	0	25,000	45,486	3,789,636	4,056,786
2018	0	0	0	25,000	45,486	3,814,636	4,082,411
2019	0	0	0	25,000	45,486	3,839,636	4,108,036
2020	0	0	0	25,000	45,486	3,864,636	4,133,636
2021	0	0	0	25,000	45,486	3,877,986	4,147,086
2022	0	0	0	25,000	45,486	3,877,986	4,147,086
2023	0	0	0	25,000	45,486	3,877,986	4,147,086
2024	0	0	0	25,000	45,486	3,877,986	4,147,086
2025	0	0	0	25,000	45,486	3,877,986	4,147,086
2026	0	0	0	25,000	45,486	3,877,986	4,147,086
2027	0	0	0	25,000	45,486	3,877,986	4,147,086
2028	0	0	0	25,000	45,486	3,877,986	4,147,086
2029	0	0	0	25,000	45,486	3,877,986	4,147,086
2030	0	0	0	25,000	45,486	3,877,986	4,147,086
2031	0	0	0	25,000	45,486	3,877,986	4,147,086
2032	0	0	0	25,000	45,486	3,877,986	4,147,086
2033	0	0	0	25,000	45,486	3,877,986	4,147,086
2034	0	0	0	25,000	45,486	3,877,986	4,147,086
2035	0	0	0	25,000	45,486	3,877,986	4,147,086
Total	403,282	0	108,527	800,000	1,690,720	179,945,566	193,531,174

Table B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	North Bay Area			South Bay Area (b				Central Coastal Area		
	Napa (a County FC&WCD (1)	Solano County WA (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (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	88,000	107,439	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	9,725	15,117	25,830	33,464	87,961	147,255	0	0	0
1989	6,195	17,256	23,451	26,227	26,042	90,000	142,269	0	0	0
1990	6,940	19,131	26,071	33,034	31,703	92,000	156,737	0	0	0
1991	1,380	6,972	8,352	9,411	12,648	28,200	50,259	0	1,240	1,240
1992	4,001	14,773	18,774	14,669	19,153	42,839	76,661	0	0	0
1993	5,286	29,180	34,466	33,635	10,271	62,065	105,971	0	0	0
1994	6,792	25,256	32,048	20,542	22,911	57,115	100,568	0	0	0
1995	5,182	21,345	26,527	30,091	17,793	28,756	76,640	0	0	0
1996	4,893	29,999	34,892	18,903	19,662	89,850	128,415	100	0	100
1997	4,341	33,494	37,835	27,522	24,063	95,601	147,186	1,199	7,439	8,638
1998	5,359	29,766	35,125	21,941	19,075	63,410	104,426	3,592	18,618	22,210
1999	11,375	41,334	52,709	61,157	52,777	98,610	212,544	3,836	27,167	31,003
2000	16,325	51,020	67,345	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2001	16,700	51,480	68,180	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2002	17,075	51,940	69,015	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2003	17,450	52,400	69,850	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2004	17,825	52,850	70,675	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2005	18,200	52,900	71,100	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2006	18,525	52,950	71,475	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2007	18,850	53,000	71,850	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2008	19,175	53,050	72,225	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2009	19,500	53,100	72,600	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2010	19,825	53,150	72,975	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2011	20,150	53,200	73,350	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2012	20,475	53,250	73,725	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2013	20,750	53,300	74,050	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2014	21,125	53,350	74,475	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2015	21,800	53,400	75,200	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2016	22,425	53,400	75,825	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2017	23,050	53,400	76,450	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2018	23,675	53,400	77,075	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2019	24,300	53,400	77,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2020	24,900	53,400	78,300	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2021	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2022	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2023	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2024	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2025	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2026	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2027	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2028	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2029	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2030	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2031	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2032	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2033	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2034	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2035	25,000	53,400	78,400	46,000	42,000	100,000	188,000	25,000	45,486	70,486
Total	958,750	2,193,521	3,152,271	2,212,410	2,106,476	6,244,865	10,563,751	908,727	1,691,960	2,600,687

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

(Acre-Feet)

Calendar Year	San Joaquin Valley Area								
			Kern County Water Agency						
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Municipal and Industrial (13)	Agricultural (14)	Total (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (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	769,696	860,600	3,100	5,700	5,743	920,243
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	23,770	1,354	62,326	420,894	483,220	1,806	2,239	46,728	559,117
1993	50,618	2,741	121,925	1,046,005	1,167,930	4,000	4,858	124,468	1,354,615
1994	28,793	1,666	87,139	570,020	657,159	2,116	3,071	62,362	755,167
1995	60,686	1,631	135,415	1,016,114	1,151,529	4,000	5,169	101,869	1,324,884
1996	56,948	1,868	135,654	1,049,409	1,185,063	4,000	4,904	236,875	1,489,658
1997	71,908	0	147,844	970,758	1,118,602	0	5,238	22,369	1,218,117
1998	55,650	542	87,511	791,079	878,590	15	4,401	20,767	959,965
1999	65,837	3,176	143,079	1,033,725	1,176,804	4,000	5,700	282,859	1,538,376
2000	53,370	3,000	121,600	925,130	1,046,730	4,000	5,700	118,500	1,231,300
2001	53,370	3,000	121,600	925,130	1,046,730	4,000	5,700	118,500	1,231,300
2002	53,370	3,000	121,600	925,130	1,046,730	4,000	5,700	118,500	1,231,300
2003	53,370	3,000	138,760	907,970	1,046,730	4,000	5,700	118,500	1,231,300
2004	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2005	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2006	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2007	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2008	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2009	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2010	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2011	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2012	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2013	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2014	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2015	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2016	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2017	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2018	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2019	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2020	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2021	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2022	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2023	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2024	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2025	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2026	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2027	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2028	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2029	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2030	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2031	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2032	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2033	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2034	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
2035	53,370	3,000	134,600	912,130	1,046,730	4,000	5,700	118,500	1,231,300
Total	3,252,089	177,951	6,941,157	52,229,039	59,170,196	215,837	347,160	6,786,131	69,949,364

Table B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (c (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (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	18,751	10,630
1988	34,079	30,438	20,652	2,006	34,000	419	9	1,770	21,386	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	849	11,430	522	3,423	3,914	3,661	5,399
1992	30,265	20,699	10,427	519	17,197	251	10,686	4,035	3,358	7,908
1993	43,102	28,134	23,100	439	38,100	734	11,514	7,761	4,361	14,397
1994	49,153	26,441	14,102	785	23,257	1,098	16,852	8,418	9,135	15,230
1995	47,286	27,233	23,100	409	38,100	480	8,722	6,961	696	12,922
1996	56,356	32,500	62,219	485	102,622	494	7,427	11,434	6,064	15,989
1997	62,393	27,712	68,340	651	69,990	444	13,974	11,861	9,654	18,175
1998	54,271	20,096	88,367	187	67,989	404	5,925	8,752	1,878	9,310
1999	76,848	32,000	23,100	1,962	38,100	2,147	5,621	12,300	18,533	18,000
2000	138,400	95,200	23,100	5,800	38,100	2,300	20,000	17,300	102,600	28,800
2001	138,400	95,200	23,100	5,800	38,100	2,300	20,000	17,300	102,600	28,800
2002	138,400	95,200	23,100	5,800	38,100	2,300	20,000	17,300	102,600	28,800
2003	138,400	95,200	23,100	5,800	38,100	2,300	20,000	17,300	102,600	28,800
2004	138,400	95,200	23,100	5,800	38,100	2,300	25,000	17,300	102,600	28,800
2005	138,400	95,200	23,100	5,800	38,100	2,300	30,000	17,300	102,600	28,800
2006	138,400	95,200	23,100	5,800	38,100	2,300	35,000	17,300	102,600	28,800
2007	138,400	95,200	23,100	5,800	38,100	2,300	40,000	17,300	102,600	28,800
2008	138,400	95,200	23,100	5,800	38,100	2,300	45,000	17,300	102,600	28,800
2009	138,400	95,200	23,100	5,800	38,100	2,300	50,000	17,300	102,600	28,800
2010	138,400	95,200	23,100	5,800	38,100	2,300	55,000	17,300	102,600	28,800
2011	138,400	95,200	23,100	5,800	38,100	2,300	60,000	17,300	102,600	28,800
2012	138,400	95,200	23,100	5,800	38,100	2,300	65,000	17,300	102,600	28,800
2013	138,400	95,200	23,100	5,800	38,100	2,300	70,000	17,300	102,600	28,800
2014	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2015	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2016	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2017	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2018	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2019	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2020	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2021	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2022	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2023	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2024	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2025	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2026	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2027	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2028	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2029	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2030	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2031	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2032	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2033	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2034	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2035	138,400	95,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
Total	6,062,524	4,056,383	1,385,117	238,752	2,151,785	97,843	2,329,619	727,656	3,985,831	1,272,561

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

(Acre-Feet)

Calendar Year	Southern California Area (continued.)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
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	691,749	0	831,328	0	334	305	639	0	1,751,419
1983	0	343,521	0	443,841	0	325	262	587	0	1,187,156
1984	0	457,582	0	569,571	108	177	272	557	0	1,591,416
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	863,143	88	459	452	999	0	2,131,607
1988	0	902,564	0	1,056,271	303	385	523	1,211	0	2,385,421
1989	0	1,156,698	0	1,342,686	403	300	486	1,189	0	2,853,747
1990	0	1,396,423	4,836	1,585,906	494	380	548	1,422	0	2,582,151
1991	0	391,447	988	442,693	265	328	420	1,013	0	549,113
1992	0	710,313	0	815,658	642	117	485	1,244	0	1,471,454
1993	0	652,190	0	823,832	746	256	444	1,446	0	2,320,330
1994	0	807,866	0	972,337	1,035	329	492	1,856	0	1,861,976
1995	0	436,042	0	601,951	910	203	308	1,421	0	2,031,423
1996	0	593,380	0	888,970	820	257	360	1,437	0	2,543,472
1997	0	721,810	1,850	1,006,854	1,005	189	231	1,425	0	2,420,055
1998	0	422,165	1,850	681,194	1,054	528	0	1,582	0	1,804,502
1999	0	980,324	1,850	1,210,785	1,500	782	352	2,634	0	3,048,051
2000	1,000	1,572,000	10,000	2,054,600	9,600	2,890	1,510	14,000	0	3,625,731
2001	3,600	1,563,000	10,000	2,048,200	9,600	27,500	1,570	38,670	0	3,644,836
2002	3,600	1,339,000	10,000	1,824,200	9,600	27,500	1,630	38,730	0	3,421,731
2003	4,800	1,487,000	10,000	1,973,400	9,600	27,500	1,690	38,790	0	3,571,826
2004	4,800	1,598,150	20,000	2,099,550	9,600	27,500	1,786	38,886	0	3,698,897
2005	7,000	1,623,150	20,000	2,131,750	9,600	27,500	1,864	38,964	0	3,731,600
2006	7,500	1,648,150	20,000	2,162,250	9,600	27,500	1,942	39,042	0	3,762,553
2007	17,300	1,673,150	20,000	2,202,050	9,600	27,500	2,020	39,120	0	3,802,806
2008	17,300	1,698,150	20,000	2,232,050	9,600	27,500	2,080	39,180	0	3,833,241
2009	17,300	1,723,150	20,000	2,262,050	9,600	27,500	2,140	39,240	0	3,863,676
2010	17,300	1,748,150	20,000	2,292,050	9,600	27,500	2,200	39,300	0	3,894,111
2011	17,300	1,773,150	20,000	2,322,050	9,600	27,500	2,260	39,360	0	3,924,546
2012	17,300	1,798,150	20,000	2,352,050	9,600	27,500	2,320	39,420	0	3,954,981
2013	17,300	1,823,150	20,000	2,382,050	9,600	27,500	2,396	39,496	0	3,985,382
2014	17,300	1,848,150	20,000	2,412,850	9,600	27,500	2,472	39,572	0	4,016,683
2015	17,300	1,873,150	20,000	2,437,850	9,600	27,500	2,548	39,648	0	4,042,484
2016	17,300	1,898,150	20,000	2,462,850	9,600	27,500	2,624	39,724	0	4,068,185
2017	17,300	1,923,150	20,000	2,487,850	9,600	27,500	2,700	39,800	0	4,093,886
2018	17,300	1,948,150	20,000	2,512,850	9,600	27,500	2,700	39,800	0	4,119,511
2019	17,300	1,973,150	20,000	2,537,850	9,600	27,500	2,700	39,800	0	4,145,136
2020	17,300	1,998,150	20,000	2,562,850	9,600	27,500	2,700	39,800	0	4,170,736
2021	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2022	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2023	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2024	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2025	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2026	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2027	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2028	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2029	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2030	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2031	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2032	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2033	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2034	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
2035	17,300	2,011,500	20,000	2,576,200	9,600	27,500	2,700	39,800	0	4,184,186
Total	534,000	83,627,460	691,374	107,160,905	355,363	974,773	97,176	1,427,312	0	194,854,290

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	North Bay Aqueduct											
	Barker Slough Pumping Plant				Cordelia Pumping Plant Solano County Water Agency				Cordelia Pumping Plant Napa County FC&WCD			
	Initial Fill Water (1)	Operational Losses (2)	Water Supply Delivery (3)	Total (4)	Initial Fill Water (5)	Operational Losses (6)	Water Supply Delivery (7)	Total (8)	Initial Fill Water (9)	Operational Losses (10)	Water Supply Delivery (a (11)	Total (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)	3,519	3,515
1987	0	0	0	0	0	0	0	0	0	0	7,693	7,693
1988	0	283	15,118	15,401	0	6	9,725	9,731	0	(1)	5,392	5,391
1989	0	758	23,451	24,209	0	0	17,246	17,246	0	(4)	6,195	6,191
1990	0	637	26,071	26,708	0	0	15,856	15,856	0	3	6,940	6,943
1991	0	661	8,352	9,013	0	0	3,855	3,855	0	192	1,380	1,572
1992	0	1,640	18,774	20,414	0	0	9,220	9,220	0	(3)	4,001	3,998
1993	0	1,154	34,466	35,620	0	0	14,471	14,471	0	1	5,286	5,287
1994	0	780	32,048	32,828	0	0	14,913	14,913	0	0	6,792	6,792
1995	0	908	26,527	27,435	0	0	15,893	15,893	0	0	5,182	5,182
1996	0	1,354	34,892	36,246	0	0	17,069	17,069	0	0	4,893	4,893
1997	0	1,421	36,421	37,842	0	29	16,613	16,642	0	175	4,363	4,538
1998	0	1,344	35,125	36,469	0	0	18,204	18,204	0	184	5,359	5,543
1999	0	51	52,709	52,760	0	5	26,720	26,725	0	5	11,375	11,380
2000	0	51	67,345	67,396	0	5	32,645	32,650	0	5	16,325	16,330
2001	0	51	68,180	68,231	0	5	32,405	32,410	0	5	16,700	16,705
2002	0	51	69,015	69,066	0	5	32,340	32,345	0	5	17,075	17,080
2003	0	51	69,850	69,901	0	5	32,100	32,105	0	5	17,450	17,455
2004	0	51	70,675	70,726	0	5	33,825	33,830	0	5	17,825	17,830
2005	0	51	71,100	71,151	0	5	33,600	33,605	0	5	18,200	18,205
2006	0	51	71,475	71,526	0	5	33,475	33,480	0	5	18,525	18,530
2007	0	51	71,850	71,901	0	5	33,150	33,155	0	5	18,850	18,855
2008	0	51	72,225	72,276	0	5	32,925	32,930	0	5	19,175	19,180
2009	0	51	72,600	72,651	0	5	32,700	32,705	0	5	19,500	19,505
2010	0	51	72,975	73,026	0	5	32,475	32,480	0	5	19,825	19,830
2011	0	51	73,350	73,401	0	5	32,150	32,155	0	5	20,150	20,155
2012	0	51	73,725	73,776	0	5	31,925	31,930	0	5	20,475	20,480
2013	0	51	74,050	74,101	0	5	31,550	31,555	0	5	20,750	20,755
2014	0	51	74,475	74,526	0	5	31,275	31,280	0	5	21,125	21,130
2015	0	51	75,200	75,251	0	5	31,300	31,305	0	5	21,800	21,805
2016	0	51	75,825	75,876	0	5	31,325	31,330	0	5	22,425	22,430
2017	0	51	76,450	76,501	0	5	31,350	31,355	0	5	23,050	23,055
2018	0	51	77,075	77,126	0	5	31,375	31,380	0	5	23,675	23,680
2019	0	51	77,700	77,751	0	5	31,400	31,405	0	5	24,300	24,305
2020	0	51	78,300	78,351	0	5	31,400	31,405	0	5	24,900	24,905
2021	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2022	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2023	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2024	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2025	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2026	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2027	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2028	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2029	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2030	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2031	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2032	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2033	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2034	0	51	78,400	78,451	0	5	31,400	31,405	0	5	25,000	25,005
2035	0	51	78,400	78,451	0	5	31,400	31,405	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

(Acre-Feet)

Calendar Year	South Bay Aqueduct						California Aqueduct							
	South Bay Pumping Plant						North San Joaquin Division							
							Banks Pumping Plant							
				Deliveries			Transportation Water							
	Initial Fill Water (13)	Operational Losses (14)	Reservoir Storage Changes (15)	Water Supply (b (16)	Recreation (17)	Total (18)	Initial Fill Water (19)	Operational Losses (20)	Reservoir Storage Changes (21)	Deliveries: Water Supply (22)	Deliveries: Recreation (23)	Deliveries: Total (24)	Conservation Water (25)	Total (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	2,299	(1,850)	110,988	130	111,567	0	90,799	20,177	1,993,278	3,865	2,108,119	200,298	2,308,417
1987	0	2,625	(584)	136,796	137	138,974	0	91,428	(23,116)	2,121,366	7,672	2,197,350	(458,725)	1,738,625
1988	0	2,884	(698)	147,255	142	149,583	0	107,250	(35,484)	2,368,793	4,889	2,445,448	(303,583)	2,141,865
1989	0	2,673	3,296	142,269	152	148,390	0	117,603	(38,058)	2,829,107	8,612	2,917,264	421,131	3,338,395
1990	0	2,763	1,982	156,537	168	161,450	0	120,791	(318,420)	2,554,658	9,261	2,366,290	(218,200)	2,148,090
1991	0	2,637	(4,532)	50,259	150	48,514	0	80,106	265,223	539,984	0	885,313	210,643	1,095,956
1992	0	2,881	756	76,661	147	80,445	0	91,391	(18,371)	1,451,436	0	1,524,456	(138,456)	1,386,000
1993	0	1,940	(20,051)	105,971	143	88,003	0	149,372	(273,789)	2,279,323	0	2,154,906	849,249	3,004,155
1994	0	1,981	1,714	100,568	168	104,431	0	148,714	(28,269)	1,828,072	0	1,948,517	(417,358)	1,531,159
1995	0	1,188	(12,333)	76,640	146	65,641	0	173,074	(334,999)	2,003,475	0	1,841,550	230,553	2,072,103
1996	0	981	2,115	77,215	150	80,461	0	172,509	379,522	2,507,143	3,907	3,063,081	288,576	3,351,657
1997	0	3,310	(4,068)	110,419	218	109,879	0	165,507	29,407	2,289,271	4,517	2,488,702	(50,000)	2,438,702
1998	0	3,197	(1,915)	71,148	114	72,544	0	130,270	102,047	1,716,402	2,107	1,950,826	255,204	2,206,030
1999	0	3,244	(2,015)	142,424	400	144,053	0	77,728	1,081	2,992,728	8,726	3,080,263	(406,136)	2,674,127
2000	0	3,203	27	180,500	400	184,130	0	78,234	3,003	3,544,386	8,730	3,634,353	(24,817)	3,609,536
2001	0	3,140	89	180,500	400	184,129	0	78,170	(2,636)	3,537,986	8,732	3,622,252	37,765	3,660,017
2002	0	3,279	0	180,500	400	184,179	0	103,357	(6,252)	3,313,986	9,575	3,420,666	268,659	3,689,325
2003	0	3,282	0	182,980	400	186,662	0	103,014	(50,358)	3,468,186	8,660	3,529,502	(339,318)	3,190,184
2004	0	3,334	0	188,000	400	191,734	0	103,472	(35,370)	3,589,336	8,660	3,666,098	162,909	3,829,007
2005	0	3,334	0	188,000	400	191,734	0	103,780	76,195	3,621,536	8,660	3,810,171	159,968	3,970,139
2006	0	3,334	0	188,000	400	191,734	0	103,018	(64,425)	3,652,036	8,660	3,699,289	(366,119)	3,333,170
2007	0	3,334	0	188,000	400	191,734	0	103,607	2,126	3,691,836	8,660	3,806,229	194,503	4,000,732
2008	0	3,334	0	188,000	400	191,734	0	103,176	(8,693)	3,721,836	8,660	3,824,979	6,552	3,831,531
2009	0	3,334	0	188,000	400	191,734	0	102,933	7,103	3,751,836	8,660	3,870,532	(1,462)	3,869,070
2010	0	3,334	0	188,000	400	191,734	0	103,150	9,107	3,781,836	8,660	3,902,753	(95,131)	3,807,622
2011	0	3,334	0	188,000	400	191,734	0	102,770	6,278	3,811,836	8,660	3,929,544	105,658	4,035,202
2012	0	3,334	0	188,000	400	191,734	0	104,456	(992)	3,841,836	8,660	3,953,960	(184,069)	3,769,891
2013	0	3,334	0	188,000	400	191,734	0	102,794	3,630	3,871,836	8,660	3,986,920	196,126	4,183,046
2014	0	3,334	0	188,000	400	191,734	0	102,779	4,356	3,902,636	8,660	4,018,431	4,665	4,023,096
2015	0	3,334	0	188,000	400	191,734	0	104,100	(16,878)	3,927,636	8,660	4,023,518	(269,979)	3,753,539
2016	0	3,334	0	188,000	400	191,734	0	102,837	19,227	3,952,636	8,660	4,083,360	153,878	4,237,238
2017	0	3,334	0	188,000	400	191,734	0	102,879	10,010	3,977,636	8,660	4,099,185	78,024	4,177,209
2018	0	3,334	0	188,000	400	191,734	0	103,303	(1,581)	4,002,636	8,660	4,113,018	59,269	4,172,287
2019	0	3,334	0	188,000	400	191,734	0	103,405	36,925	4,027,636	8,660	4,176,626	6,653	4,183,279
2020	0	3,334	0	188,000	400	191,734	0	104,838	774	4,052,636	8,660	4,166,908	(274,889)	3,892,019
2021	0	3,334	0	188,000	400	191,734	0	103,226	(27,906)	4,065,986	8,660	4,149,966	231,066	4,381,032
2022	0	3,334	0	188,000	400	191,734	0	103,285	3,887	4,065,986	8,660	4,181,818	72,550	4,254,368
2023	0	3,334	0	188,000	400	191,734	0	103,278	11,696	4,065,986	8,660	4,189,620	(134,092)	4,055,528
2024	0	3,334	0	188,000	400	191,734	0	104,848	21,872	4,065,986	8,660	4,201,366	(149,680)	4,051,686
2025	0	3,334	0	188,000	400	191,734	0	103,105	(37,453)	4,065,986	8,660	4,140,298	287,254	4,427,552
2026	0	3,334	0	188,000	400	191,734	0	103,328	49,982	4,065,986	8,660	4,227,956	77,862	4,305,818
2027	0	3,334	0	188,000	400	191,734	0	102,739	(107,026)	4,065,986	8,660	4,070,359	(186,670)	3,883,689
2028	0	3,334	0	188,000	400	191,734	0	104,256	89,258	4,065,986	8,660	4,268,160	(211,197)	4,056,963
2029	0	3,334	0	188,000	400	191,734	0	103,409	(25,046)	4,065,986	8,660	4,153,009	339,770	4,492,779
2030	0	3,334	0	188,000	400	191,734	0	103,108	17,346	4,065,986	8,660	4,195,100	39,880	4,234,980
2031	0	3,334	0	188,000	400	191,734	0	102,691	(82,368)	4,065,986	8,660	4,094,969	(155,995)	3,938,974
2032	0	3,334	0	188,000	400	191,734	0	104,268	100,034	4,065,986	8,660	4,278,948	(214,636)	4,064,312
2033	0	3,334	0	188,000	400	191,734	0	103,249	(30,550)	4,065,986	8,660	4,147,345	303,838	4,451,183
2034	0	3,334	0	188,000	400	191,734	0	103,250	(11,209)	4,065,986	8,660	4,166,687	489	4,167,176
2035	0	3,334	0	188,000	400	191,734	0	103,523	67,256	4,065,986	8,660	4,245,425	25,749	4,271,174

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

(Acre-Feet)

	California Aqueduct (continued)											
	San Luis Division						South San Joaquin Division					
	Dos Amigos Pumping Plant						Buena Vista Pumping Plant					
				Deliveries						Deliveries		
Calendar Year	Initial Fill Water (27)	Operational Losses (28)	Reservoir Storage Changes (29)	Water Supply (30)	Recreation (31)	Total (32)	Initial Fill Water (33)	Operational Losses (34)	Reservoir Storage Changes (35)	Water Supply (36)	Recreation (37)	Total (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	51,963	19,989	1,877,183	3,426	1,952,561	0	36,751	37,546	1,014,294	3,285	1,091,876
1987	0	64,828	(25,707)	1,978,945	7,121	2,025,187	0	30,495	(25,522)	1,027,361	6,937	1,039,271
1988	0	72,680	(34,592)	2,217,126	4,490	2,259,704	0	38,804	(29,747)	1,244,196	4,360	1,257,613
1989	0	90,090	(29,411)	2,679,845	7,652	2,748,176	0	29,594	(60,826)	1,532,625	7,490	1,508,883
1990	0	118,316	(15,942)	2,394,999	8,922	2,506,295	0	46,865	(14,959)	1,769,991	8,879	1,810,776
1991	0	922,227	9,325	489,584	4,605	1,425,741	0	39,274	96,506	447,152	4,560	587,492
1992	0	118,796	(225,603)	1,372,536	2,079	1,267,808	0	28,138	(98,271)	920,978	1,995	852,840
1993	0	136,432	(220,537)	2,170,494	1,864	2,088,253	0	14,186	(128,363)	908,200	1,676	795,699
1994	0	152,414	(78,957)	1,724,433	3,083	1,800,973	0	35,083	(88,211)	1,107,122	2,918	1,056,912
1995	0	137,937	(12,473)	1,921,666	1,711	2,048,841	0	33,963	(16,431)	706,742	1,669	725,943
1996	0	45,591	16,057	2,425,024	2,998	2,489,670	0	31,304	16,057	988,612	2,928	1,038,901
1997	0	102,577	37,765	2,173,542	3,934	2,317,818	0	46,084	35,182	1,075,984	3,920	1,161,170
1998	0	61,663	10,141	3,031,584	7,010	3,110,398	0	45,694	10,141	1,746,752	7,010	1,809,597
1999	0	61,423	3,096	2,844,604	7,210	2,916,333	0	45,454	3,096	1,220,927	7,010	1,276,487
2000	0	61,970	2,976	3,358,186	7,210	3,430,342	0	46,001	2,976	2,155,400	7,010	2,211,387
2001	0	61,969	(2,725)	3,351,786	7,210	3,418,240	0	46,000	(2,725)	2,149,000	7,010	2,199,285
2002	0	57,062	(6,252)	3,127,786	7,210	3,185,806	0	41,093	(6,252)	1,975,000	7,010	2,016,851
2003	0	56,804	(50,358)	3,279,506	7,210	3,293,162	0	40,835	(50,358)	2,129,200	7,010	2,126,687
2004	0	56,571	(35,370)	3,395,636	7,210	3,424,047	0	40,602	(35,370)	2,258,604	7,010	2,270,846
2005	0	56,892	76,195	3,427,836	7,210	3,568,133	0	40,923	76,195	2,294,124	7,010	2,418,252
2006	0	56,795	(64,425)	3,458,336	7,210	3,457,916	0	40,826	(64,425)	2,329,107	7,010	2,312,518
2007	0	56,661	2,126	3,498,136	7,210	3,564,133	0	40,692	2,126	2,373,804	7,010	2,423,632
2008	0	56,636	(8,693)	3,528,136	7,210	3,583,289	0	40,667	(8,693)	2,403,804	7,010	2,442,788
2009	0	56,495	7,103	3,558,136	7,210	3,628,944	0	40,526	7,103	2,433,804	7,010	2,488,443
2010	0	56,574	9,107	3,588,136	7,210	3,661,027	0	40,605	9,107	2,463,804	7,010	2,520,526
2011	0	56,653	6,278	3,618,136	7,210	3,688,277	0	40,684	6,278	2,493,804	7,010	2,547,776
2012	0	56,690	(992)	3,648,136	7,210	3,711,044	0	40,721	(992)	2,523,804	7,010	2,570,543
2013	0	56,751	3,630	3,678,136	7,210	3,745,727	0	40,782	3,630	2,553,804	7,010	2,605,226
2014	0	56,703	4,356	3,708,936	7,210	3,777,205	0	40,734	4,356	2,584,604	7,010	2,636,704
2015	0	56,850	(16,878)	3,733,936	7,210	3,781,118	0	40,881	(16,878)	2,609,604	7,010	2,640,617
2016	0	56,707	19,227	3,758,936	7,210	3,842,080	0	40,738	19,227	2,634,604	7,010	2,701,579
2017	0	56,974	10,010	3,783,936	7,210	3,858,130	0	41,005	10,010	2,659,604	7,010	2,717,629
2018	0	57,001	(1,581)	3,808,936	7,210	3,871,566	0	41,032	(1,581)	2,684,604	7,010	2,731,065
2019	0	57,065	36,925	3,833,936	7,210	3,935,136	0	41,096	36,925	2,709,604	7,010	2,794,635
2020	0	57,143	774	3,858,936	7,210	3,924,063	0	41,174	774	2,734,604	7,010	2,783,562
2021	0	57,397	(27,906)	3,872,286	7,210	3,908,987	0	41,428	(27,906)	2,747,954	7,010	2,768,486
2022	0	57,249	3,887	3,872,286	7,210	3,940,632	0	41,280	3,887	2,747,954	7,010	2,800,131
2023	0	57,239	11,696	3,872,286	7,210	3,948,431	0	41,270	11,696	2,747,954	7,010	2,807,930
2024	0	57,090	21,872	3,872,286	7,210	3,958,458	0	41,121	21,872	2,747,954	7,010	2,817,957
2025	0	56,961	(37,453)	3,872,286	7,210	3,899,004	0	40,992	(37,453)	2,747,954	7,010	2,758,503
2026	0	57,041	49,982	3,872,286	7,210	3,986,519	0	41,072	49,982	2,747,954	7,010	2,846,018
2027	0	57,244	(107,026)	3,872,286	7,210	3,829,714	0	41,275	(107,026)	2,747,954	7,010	2,689,213
2028	0	56,864	89,258	3,872,286	7,210	4,025,618	0	40,895	89,258	2,747,954	7,010	2,885,117
2029	0	57,140	(25,046)	3,872,286	7,210	3,911,590	0	41,171	(25,046)	2,747,954	7,010	2,771,089
2030	0	57,287	17,346	3,872,286	7,210	3,954,129	0	41,318	17,346	2,747,954	7,010	2,813,628
2031	0	57,216	(82,368)	3,872,286	7,210	3,854,344	0	41,247	(82,368)	2,747,954	7,010	2,713,843
2032	0	56,798	100,034	3,872,286	7,210	4,036,328	0	40,829	100,034	2,747,954	7,010	2,895,827
2033	0	57,443	(30,550)	3,872,286	7,210	3,906,389	0	41,474	(30,550)	2,747,954	7,010	2,765,888
2034	0	57,393	(11,209)	3,872,286	7,210	3,925,680	0	41,424	(11,209)	2,747,954	7,010	2,785,179
2035	0	57,307	67,256	3,872,286	7,210	4,004,059	0	41,338	67,256	2,747,954	7,010	2,863,558

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	Teerink Pumping Plant						Chrisman Pumping Plant					
				Deliveries						Deliveries		
	Initial Fill Water (39)	Operational Losses (40)	Reservoir Storage Changes (41)	Water Supply (42)	Recreation (43)	Total (44)	Initial Fill Water (45)	Operational Losses (46)	Reservoir Storage Changes (47)	Water Supply (48)	Recreation (49)	Total (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	38,747	37,546	882,300	3,285	961,878	0	41,421	37,546	839,839	3,285	922,091
1987	0	47,815	(25,522)	897,905	6,937	927,135	0	33,195	(25,522)	853,157	6,937	867,767
1988	0	53,815	(29,747)	1,097,643	4,360	1,126,071	0	39,775	(29,747)	1,055,649	4,360	1,070,037
1989	0	49,088	(60,826)	1,382,599	7,490	1,378,351	0	42,307	(60,826)	1,339,358	7,490	1,328,329
1990	0	66,868	(14,959)	1,627,246	8,879	1,688,034	0	56,653	(14,959)	1,590,893	8,879	1,641,466
1991	0	40,564	105,176	446,384	4,560	596,684	0	34,016	105,176	446,384	4,560	590,136
1992	0	31,820	(92,123)	844,376	1,995	786,068	0	34,477	(92,123)	820,133	1,995	764,482
1993	0	27,158	(127,738)	799,143	1,676	700,239	0	28,614	(127,738)	771,146	1,676	673,698
1994	0	50,802	(88,211)	1,007,214	2,918	972,723	0	57,203	(88,211)	977,703	2,918	949,613
1995	0	48,705	(16,431)	2,586,829	1,669	2,620,772	0	36,309	(16,431)	560,695	1,669	582,242
1996	0	58,437	16,057	836,819	2,928	914,241	0	43,710	16,057	800,633	2,928	863,328
1997	0	64,099	34,855	883,836	3,920	986,710	0	72,288	34,846	850,962	3,920	962,016
1998	0	57,690	2,065	584,333	1,585	645,673	0	62,646	2,131	561,236	1,585	627,598
1999	0	41,824	3,096	1,096,619	7,010	1,148,549	0	41,574	3,096	1,056,916	7,010	1,108,596
2000	0	42,371	2,976	2,047,653	7,010	2,100,010	0	42,121	2,976	2,003,724	7,010	2,055,831
2001	0	42,370	(2,725)	2,041,253	7,010	2,087,908	0	42,120	(2,725)	1,997,324	7,010	2,043,729
2002	0	37,463	(6,252)	1,867,253	7,010	1,905,474	0	37,213	(6,252)	1,823,324	7,010	1,861,295
2003	0	37,205	(50,358)	2,021,453	7,010	2,015,310	0	36,955	(50,358)	1,977,524	7,010	1,971,131
2004	0	36,972	(35,370)	2,143,400	7,010	2,152,012	0	36,722	(35,370)	2,105,221	7,010	2,113,583
2005	0	37,293	76,195	2,178,920	7,010	2,299,418	0	37,043	76,195	2,140,741	7,010	2,260,989
2006	0	37,196	(64,425)	2,213,903	7,010	2,193,684	0	36,946	(64,425)	2,175,724	7,010	2,155,255
2007	0	37,062	2,126	2,258,600	7,010	2,304,798	0	36,812	2,126	2,220,421	7,010	2,266,369
2008	0	37,037	(8,693)	2,288,600	7,010	2,323,954	0	36,787	(8,693)	2,250,421	7,010	2,285,525
2009	0	36,896	7,103	2,318,600	7,010	2,369,609	0	36,646	7,103	2,280,421	7,010	2,331,180
2010	0	36,975	9,107	2,348,600	7,010	2,401,692	0	36,725	9,107	2,310,421	7,010	2,363,263
2011	0	37,054	6,278	2,378,600	7,010	2,428,942	0	36,804	6,278	2,340,421	7,010	2,390,513
2012	0	37,091	(992)	2,408,600	7,010	2,451,709	0	36,841	(992)	2,370,421	7,010	2,413,280
2013	0	37,152	3,630	2,438,600	7,010	2,486,392	0	36,902	3,630	2,400,421	7,010	2,447,963
2014	0	37,104	4,356	2,469,400	7,010	2,517,870	0	36,854	4,356	2,431,221	7,010	2,479,441
2015	0	37,251	(16,878)	2,494,400	7,010	2,521,783	0	37,001	(16,878)	2,456,221	7,010	2,483,354
2016	0	37,108	19,227	2,519,400	7,010	2,582,745	0	36,858	19,227	2,481,221	7,010	2,544,316
2017	0	37,375	10,010	2,544,400	7,010	2,598,795	0	37,125	10,010	2,506,221	7,010	2,560,366
2018	0	37,402	(1,581)	2,569,400	7,010	2,612,231	0	37,152	(1,581)	2,531,221	7,010	2,573,802
2019	0	37,466	36,925	2,594,400	7,010	2,675,801	0	37,216	36,925	2,556,221	7,010	2,637,372
2020	0	37,544	774	2,619,400	7,010	2,664,728	0	37,294	774	2,581,221	7,010	2,626,299
2021	0	37,798	(27,906)	2,632,750	7,010	2,649,652	0	37,548	(27,906)	2,594,571	7,010	2,611,223
2022	0	37,650	3,887	2,632,750	7,010	2,681,297	0	37,400	3,887	2,594,571	7,010	2,642,868
2023	0	37,640	11,696	2,632,750	7,010	2,689,096	0	37,390	11,696	2,594,571	7,010	2,650,667
2024	0	37,491	21,872	2,632,750	7,010	2,699,123	0	37,241	21,872	2,594,571	7,010	2,660,694
2025	0	37,362	(37,453)	2,632,750	7,010	2,639,669	0	37,112	(37,453)	2,594,571	7,010	2,601,240
2026	0	37,442	49,982	2,632,750	7,010	2,727,184	0	37,192	49,982	2,594,571	7,010	2,688,755
2027	0	37,645	(107,026)	2,632,750	7,010	2,570,379	0	37,395	(107,026)	2,594,571	7,010	2,531,950
2028	0	37,265	89,258	2,632,750	7,010	2,766,283	0	37,015	89,258	2,594,571	7,010	2,727,854
2029	0	37,541	(25,046)	2,632,750	7,010	2,652,255	0	37,291	(25,046)	2,594,571	7,010	2,613,826
2030	0	37,688	17,346	2,632,750	7,010	2,694,794	0	37,438	17,346	2,594,571	7,010	2,656,365
2031	0	37,617	(82,368)	2,632,750	7,010	2,595,009	0	37,367	(82,368)	2,594,571	7,010	2,556,580
2032	0	37,199	100,034	2,632,750	7,010	2,776,993	0	36,949	100,034	2,594,571	7,010	2,738,564
2033	0	37,844	(30,550)	2,632,750	7,010	2,647,054	0	37,594	(30,550)	2,594,571	7,010	2,608,625
2034	0	37,794	(11,209)	2,632,750	7,010	2,666,345	0	37,544	(11,209)	2,594,571	7,010	2,627,916
2035	0	37,708	67,256	2,632,750	7,010	2,744,724	0	37,458	67,256	2,594,571	7,010	2,706,295

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	Tehachapi Division						Mojave Divsion					
	Edmonston Pumping Plant						Alamo Powerplant					
	Initial Fill Water (51)	Operational Losses (52)	Reservoir Storage Changes (53)	Deliveries		Total (56)	Initial Fill Water (57)	Operational Losses (58)	Reservoir Storage Changes (59)	Deliveries		Total (62)
				Water Supply (54)	Recreation (55)					Water Supply (60)	Recreation (61)	
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	36,918	37,546	823,067	3,285	900,816	0	14,735	12,258	429,864	1,508	458,365
1987	0	29,580	(25,522)	841,322	6,937	852,317	0	11,665	(15,270)	417,870	1,239	415,504
1988	0	42,017	(29,747)	1,044,737	4,360	1,061,367	0	21,696	1,101	537,568	971	561,336
1989	0	32,270	(60,826)	1,328,041	7,490	1,306,975	0	4,686	(200,363)	716,360	1,407	522,090
1990	0	42,188	(14,959)	1,579,466	8,879	1,615,574	0	8,888	(5,783)	788,111	1,388	792,604
1991	0	33,999	105,176	441,453	4,560	585,188	0	17,908	34,422	177,544	394	230,268
1992	0	23,121	(92,123)	809,771	1,995	742,764	0	14,873	(17,115)	374,110	423	372,291
1993	0	11,946	(127,738)	759,485	1,676	645,369	0	9,304	(3,455)	308,222	443	314,514
1994	0	40,808	(88,211)	960,815	2,918	916,330	0	21,837	3,395	469,996	430	495,658
1995	0	36,001	(16,431)	542,465	1,669	563,704	0	14,139	(30,761)	384,836	427	368,641
1996	0	37,357	16,057	779,918	2,928	836,260	0	7,247	(10,985)	493,852	565	490,679
1997	0	60,881	34,872	814,610	3,920	914,283	0	11,084	55,259	442,436	85	508,864
1998	0	48,740	2,124	532,524	1,585	584,973	0	16,046	3,600	252,101	53	271,800
1999	0	40,024	3,096	1,039,385	7,010	1,089,515	0	23,101	(3,993)	761,583	1,630	782,321
2000	0	40,571	2,976	1,991,900	7,010	2,042,457	0	23,182	2,902	1,356,250	1,630	1,383,964
2001	0	40,570	(2,725)	1,985,500	7,010	2,030,355	0	23,181	(2,799)	1,359,850	1,630	1,381,862
2002	0	35,663	(6,252)	1,811,500	7,010	1,847,921	0	21,204	6,382	1,220,850	1,630	1,250,066
2003	0	35,405	(50,358)	1,965,700	7,010	1,957,757	0	21,153	(24,004)	1,362,050	1,630	1,360,829
2004	0	35,172	(35,370)	2,086,850	7,010	2,093,662	0	21,097	(18,957)	1,214,272	1,630	1,218,042
2005	0	35,493	76,195	2,122,370	7,010	2,241,068	0	21,078	37,368	1,232,702	1,630	1,292,778
2006	0	35,396	(64,425)	2,157,353	7,010	2,135,334	0	21,192	(33,933)	1,249,432	1,630	1,238,321
2007	0	35,262	2,126	2,202,050	7,010	2,246,448	0	20,986	9,795	1,275,462	1,630	1,307,873
2008	0	35,237	(8,693)	2,232,050	7,010	2,265,604	0	21,004	(8,485)	1,291,691	1,630	1,305,840
2009	0	35,096	7,103	2,262,050	7,010	2,311,259	0	20,857	3,270	1,307,920	1,630	1,333,677
2010	0	35,175	9,107	2,292,050	7,010	2,343,342	0	20,942	8,715	1,324,151	1,630	1,355,438
2011	0	35,254	6,278	2,322,050	7,010	2,370,592	0	20,983	209	1,340,381	1,630	1,363,203
2012	0	35,291	(992)	2,352,050	7,010	2,393,359	0	20,968	238	1,356,613	1,630	1,379,449
2013	0	35,352	3,630	2,382,050	7,010	2,428,042	0	20,961	(8,166)	1,372,842	1,630	1,387,267
2014	0	35,304	4,356	2,412,850	7,010	2,459,520	0	20,840	4,674	1,389,872	1,630	1,417,016
2015	0	35,451	(16,878)	2,437,850	7,010	2,463,433	0	20,895	(12,593)	1,401,105	1,630	1,411,037
2016	0	35,308	19,227	2,462,850	7,010	2,524,395	0	20,834	7,106	1,412,334	1,630	1,441,904
2017	0	35,575	10,010	2,487,850	7,010	2,540,445	0	20,939	3,632	1,423,565	1,630	1,449,766
2018	0	35,602	(1,581)	2,512,850	7,010	2,553,881	0	21,021	(4,151)	1,434,796	1,630	1,453,296
2019	0	35,666	36,925	2,537,850	7,010	2,617,451	0	20,991	19,335	1,446,026	1,630	1,487,982
2020	0	35,744	774	2,562,850	7,010	2,606,378	0	20,899	(12,065)	1,457,253	1,630	1,467,717
2021	0	35,998	(27,906)	2,576,200	7,010	2,591,302	0	21,007	(18,810)	1,463,252	1,630	1,467,079
2022	0	35,850	3,887	2,576,200	7,010	2,622,947	0	20,985	11,886	1,463,252	1,630	1,497,753
2023	0	35,840	11,696	2,576,200	7,010	2,630,746	0	20,971	9,410	1,463,252	1,630	1,495,263
2024	0	35,691	21,872	2,576,200	7,010	2,640,773	0	20,881	(525)	1,463,252	1,630	1,485,238
2025	0	35,562	(37,453)	2,576,200	7,010	2,581,319	0	20,774	(12,036)	1,463,252	1,630	1,473,620
2026	0	35,642	49,982	2,576,200	7,010	2,668,834	0	20,789	27,134	1,463,252	1,630	1,512,805
2027	0	35,845	(107,026)	2,576,200	7,010	2,512,029	0	21,040	(23,384)	1,463,252	1,630	1,462,538
2028	0	35,465	89,258	2,576,200	7,010	2,707,933	0	20,849	(14,110)	1,463,252	1,630	1,471,621
2029	0	35,741	(25,046)	2,576,200	7,010	2,593,905	0	20,894	10,621	1,463,252	1,630	1,496,397
2030	0	35,888	17,346	2,576,200	7,010	2,636,444	0	20,872	14,531	1,463,252	1,630	1,500,285
2031	0	35,817	(82,368)	2,576,200	7,010	2,536,659	0	21,023	(8,243)	1,463,252	1,630	1,477,662
2032	0	35,399	100,034	2,576,200	7,010	2,718,643	0	20,845	(2,014)	1,463,252	1,630	1,483,713
2033	0	36,044	(30,550)	2,576,200	7,010	2,588,704	0	21,039	(1,957)	1,463,252	1,630	1,483,964
2034	0	35,994	(11,209)	2,576,200	7,010	2,607,995	0	21,036	(10,830)	1,463,252	1,630	1,475,088
2035	0	35,908	67,256	2,576,200	7,010	2,686,374	0	20,987	43,992	1,463,252	1,630	1,529,861

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	Mojave Division (continued)											
	Pearblossom Pumping Plant						Mojave Siphon Powerplant					
	Initial Fill Water (63)	Operational Losses (64)	Reservoir Storage Changes (65)	Deliveries: Water Supply (66)	Deliveries: Recreation (67)	Total (68)	Initial Fill Water (69)	Operational Losses (70)	Reservoir Storage Changes (71)	Deliveries: Water Supply (72)	Deliveries: Recreation (73)	Total (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	30,876	12,258	394,156	1,508	438,798	0	0	0	0	0	0
1987	0	27,552	(15,270)	367,531	1,239	381,052	0	0	0	0	0	0
1988	0	32,209	1,101	501,300	971	535,581	0	0	0	0	0	0
1989	0	31,500	(20,363)	661,189	1,407	673,733	0	0	0	0	0	0
1990	0	32,672	(5,793)	730,560	1,388	758,827	0	0	0	0	0	0
1991	0	15,209	34,774	164,149	394	214,526	0	0	0	0	0	0
1992	0	13,989	(17,451)	338,249	423	335,210	0	0	0	0	0	0
1993	0	9,779	(3,455)	255,117	443	261,884	0	0	0	0	0	0
1994	0	150	3,395	409,928	430	413,903	0	0	0	0	0	0
1995	0	6,820	(29,282)	328,882	427	306,847	0	0	0	0	0	0
1996	0	9,514	(10,985)	424,252	565	423,346	0	0	0	0	0	0
1997	0	(7,910)	54,147	370,735	85	417,057	0	(7,910)	54,147	370,735	85	417,057
1998	0	(5,906)	3,960	193,149	53	191,256	0	(5,906)	3,960	193,149	53	191,256
1999	0	17,751	(3,993)	666,788	1,430	681,976	0	14,281	(3,993)	662,667	1,430	674,385
2000	0	17,832	2,902	1,196,750	1,430	1,218,914	0	14,362	2,902	1,178,250	1,430	1,196,944
2001	0	17,831	(2,799)	1,200,350	1,430	1,216,812	0	14,361	(2,799)	1,181,850	1,430	1,194,842
2002	0	15,854	6,382	1,061,350	1,430	1,085,016	0	12,384	6,382	1,042,850	1,430	1,063,046
2003	0	15,803	(24,004)	1,202,550	1,430	1,195,779	0	12,333	(24,004)	1,179,050	1,430	1,168,809
2004	0	15,747	(18,957)	1,054,772	1,430	1,052,992	0	12,277	(18,957)	1,031,272	1,430	1,026,022
2005	0	15,728	37,368	1,073,202	1,430	1,127,728	0	12,258	37,368	1,044,702	1,430	1,095,758
2006	0	15,842	(33,933)	1,089,932	1,430	1,073,271	0	12,372	(33,933)	1,056,432	1,430	1,036,301
2007	0	15,636	9,795	1,115,962	1,430	1,142,823	0	12,166	9,795	1,077,462	1,430	1,100,853
2008	0	15,654	(8,485)	1,132,191	1,430	1,140,790	0	12,184	(8,485)	1,088,691	1,430	1,093,820
2009	0	15,507	3,270	1,148,420	1,430	1,168,627	0	12,037	3,270	1,099,920	1,430	1,116,657
2010	0	15,592	8,715	1,164,651	1,430	1,190,388	0	12,122	8,715	1,111,151	1,430	1,133,418
2011	0	15,633	209	1,180,881	1,430	1,198,153	0	12,163	209	1,122,381	1,430	1,136,183
2012	0	15,618	238	1,197,113	1,430	1,214,399	0	12,148	238	1,133,613	1,430	1,147,429
2013	0	15,611	(8,166)	1,213,342	1,430	1,222,217	0	12,141	(8,166)	1,144,842	1,430	1,150,247
2014	0	15,490	4,674	1,230,372	1,430	1,251,966	0	12,020	4,674	1,156,072	1,430	1,174,196
2015	0	15,545	(12,593)	1,241,605	1,430	1,245,987	0	12,075	(12,593)	1,167,305	1,430	1,168,217
2016	0	15,484	7,106	1,252,834	1,430	1,276,854	0	12,014	7,106	1,178,534	1,430	1,199,084
2017	0	15,589	3,632	1,264,065	1,430	1,284,716	0	12,119	3,632	1,189,765	1,430	1,206,946
2018	0	15,671	(4,151)	1,275,296	1,430	1,288,246	0	12,201	(4,151)	1,200,996	1,430	1,210,476
2019	0	15,641	19,335	1,286,526	1,430	1,322,932	0	12,171	19,335	1,212,226	1,430	1,245,162
2020	0	15,549	(12,065)	1,297,753	1,430	1,302,667	0	12,079	(12,065)	1,223,453	1,430	1,224,897
2021	0	15,657	(18,810)	1,303,752	1,430	1,302,029	0	12,187	(18,810)	1,229,452	1,430	1,224,259
2022	0	15,635	11,886	1,303,752	1,430	1,332,703	0	12,165	11,886	1,229,452	1,430	1,254,933
2023	0	15,621	9,410	1,303,752	1,430	1,330,213	0	12,151	9,410	1,229,452	1,430	1,252,443
2024	0	15,531	(525)	1,303,752	1,430	1,320,188	0	12,061	(525)	1,229,452	1,430	1,242,418
2025	0	15,424	(12,036)	1,303,752	1,430	1,308,570	0	11,954	(12,036)	1,229,452	1,430	1,230,800
2026	0	15,439	27,134	1,303,752	1,430	1,347,755	0	11,969	27,134	1,229,452	1,430	1,269,985
2027	0	15,690	(23,384)	1,303,752	1,430	1,297,488	0	12,220	(23,384)	1,229,452	1,430	1,219,718
2028	0	15,499	(14,110)	1,303,752	1,430	1,306,571	0	12,029	(14,110)	1,229,452	1,430	1,228,801
2029	0	15,544	10,621	1,303,752	1,430	1,331,347	0	12,074	10,621	1,229,452	1,430	1,253,577
2030	0	15,522	14,531	1,303,752	1,430	1,335,235	0	12,052	14,531	1,229,452	1,430	1,257,465
2031	0	15,673	(8,243)	1,303,752	1,430	1,312,612	0	12,203	(8,243)	1,229,452	1,430	1,234,842
2032	0	15,495	(2,014)	1,303,752	1,430	1,318,663	0	12,025	(2,014)	1,229,452	1,430	1,240,893
2033	0	15,689	(1,957)	1,303,752	1,430	1,318,914	0	12,219	(1,957)	1,229,452	1,430	1,241,144
2034	0	15,686	(10,830)	1,303,752	1,430	1,310,038	0	12,216	(10,830)	1,229,452	1,430	1,232,268
2035	0	15,637	43,992	1,303,752	1,430	1,364,811	0	12,167	43,992	1,229,452	1,430	1,287,041

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	Santa Ana Division						West Branch, California Aqueduct					
	Devil Canyon Powerplant						Oso Pumping Plant					
	Initial Fill Water (75)	Operational Losses (76)	Reservoir Storage Changes (77)	Deliveries		Total (80)	Initial Fill Water (81)	Operational Losses (82)	Reservoir Storage Changes (83)	Deliveries		Total (86)
				Water Supply (78)	Recreation (79)					Water Supply (84)	Recreation (85)	
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	9,486	8,339	392,650	1,378	411,853	0	22,387	25,288	393,203	1,777	442,655
1987	0	7,919	(11,331)	365,451	1,118	363,157	0	18,164	(10,252)	433,452	5,698	447,062
1988	0	11,090	2,238	499,285	861	513,474	0	20,885	(30,848)	507,169	3,389	500,595
1989	0	13,116	(5,487)	658,730	1,301	667,660	0	28,925	(40,463)	611,681	6,083	606,226
1990	0	13,439	(4,622)	728,723	1,281	738,821	0	34,778	(9,176)	791,355	7,491	824,448
1991	0	10,836	18,308	161,032	340	190,516	0	16,323	70,754	263,909	4,166	355,152
1992	0	9,157	(9,084)	328,354	371	328,798	0	8,200	(75,008)	435,661	1,572	370,425
1993	0	5,602	5,593	244,678	364	256,237	0	2,668	(124,283)	451,263	1,233	330,881
1994	0	10,915	(11,045)	393,690	357	393,917	0	17,831	(91,606)	490,819	2,488	419,532
1995	0	11,268	2,331	320,978	358	334,935	0	21,506	14,330	157,629	1,242	194,707
1996	0	9,496	13,015	417,656	494	440,661	0	30,121	27,042	286,066	2,363	345,592
1997	0	125	(952)	353,108	0	352,281	0	39,007	(20,398)	351,234	3,835	373,678
1998	0	126	(8)	183,924	0	184,042	0	1,532	(1,469)	259,640	1,532	261,235
1999	0	10,123	374	660,705	1,250	672,452	0	16,873	7,089	277,802	5,380	307,144
2000	0	10,150	2,902	1,172,450	1,250	1,186,752	0	17,339	74	635,650	5,380	658,443
2001	0	10,149	(2,799)	1,176,050	1,250	1,184,650	0	17,339	74	625,650	5,380	648,443
2002	0	8,753	3,774	1,037,050	1,250	1,050,827	0	14,409	(12,634)	590,650	5,380	597,805
2003	0	8,759	(1,861)	1,173,250	1,250	1,181,398	0	14,202	(26,354)	603,650	5,380	596,878
2004	0	8,587	(8,130)	1,025,472	1,250	1,027,179	0	14,025	(16,413)	872,578	5,380	875,570
2005	0	8,577	8,822	1,038,902	1,250	1,057,551	0	14,365	38,827	889,668	5,380	948,240
2006	0	8,624	(16,306)	1,050,632	1,250	1,044,200	0	14,154	(30,492)	907,921	5,380	896,963
2007	0	8,521	3,939	1,071,662	1,250	1,085,372	0	14,226	(7,669)	926,588	5,380	938,525
2008	0	8,507	(3,677)	1,082,891	1,250	1,088,971	0	14,183	(208)	940,359	5,380	959,714
2009	0	8,511	(1,962)	1,094,120	1,250	1,101,919	0	14,189	3,833	954,130	5,380	977,532
2010	0	8,526	10,520	1,105,351	1,250	1,125,647	0	14,183	392	967,899	5,380	987,854
2011	0	8,501	(5,625)	1,116,581	1,250	1,120,707	0	14,221	6,069	981,669	5,380	1,007,339
2012	0	8,516	50	1,127,813	1,250	1,137,629	0	14,273	(1,230)	995,437	5,380	1,013,860
2013	0	8,462	6,106	1,139,042	1,250	1,154,860	0	14,341	11,796	1,009,208	5,380	1,040,725
2014	0	8,484	(5,083)	1,150,272	1,250	1,154,923	0	14,414	(318)	1,022,978	5,380	1,042,454
2015	0	8,511	535	1,161,505	1,250	1,171,801	0	14,506	(4,285)	1,036,745	5,380	1,052,346
2016	0	8,508	(6,502)	1,172,734	1,250	1,175,990	0	14,424	12,121	1,050,516	5,380	1,082,441
2017	0	8,576	7,278	1,183,965	1,250	1,201,069	0	14,586	6,378	1,064,285	5,380	1,090,629
2018	0	8,463	(4,196)	1,195,196	1,250	1,200,713	0	14,531	2,570	1,078,054	5,380	1,100,535
2019	0	8,498	7,018	1,206,426	1,250	1,223,192	0	14,625	17,590	1,091,824	5,380	1,129,419
2020	0	8,507	(9,357)	1,217,653	1,250	1,218,053	0	14,795	12,839	1,105,597	5,380	1,138,611
2021	0	8,431	(1,993)	1,223,652	1,250	1,231,340	0	14,941	(9,096)	1,112,948	5,380	1,124,173
2022	0	8,465	13,728	1,223,652	1,250	1,247,095	0	14,815	(7,999)	1,112,948	5,380	1,125,144
2023	0	8,489	(3,342)	1,223,652	1,250	1,230,049	0	14,819	2,286	1,112,948	5,380	1,135,433
2024	0	8,461	3,249	1,223,652	1,250	1,236,612	0	14,760	22,397	1,112,948	5,380	1,155,485
2025	0	8,442	(10,935)	1,223,652	1,250	1,222,409	0	14,738	(25,417)	1,112,948	5,380	1,107,649
2026	0	8,454	13,653	1,223,652	1,250	1,247,009	0	14,803	22,848	1,112,948	5,380	1,155,979
2027	0	8,487	(17,105)	1,223,652	1,250	1,216,284	0	14,755	(83,642)	1,112,948	5,380	1,049,441
2028	0	8,455	1,149	1,223,652	1,250	1,234,506	0	14,566	103,368	1,112,948	5,380	1,236,262
2029	0	8,480	(984)	1,223,652	1,250	1,232,398	0	14,797	(35,667)	1,112,948	5,380	1,097,458
2030	0	8,411	980	1,223,652	1,250	1,234,293	0	14,966	2,815	1,112,948	5,380	1,136,109
2031	0	8,477	14,675	1,223,652	1,250	1,248,054	0	14,744	(74,125)	1,112,948	5,380	1,058,947
2032	0	8,453	(12,522)	1,223,652	1,250	1,220,833	0	14,504	102,048	1,112,948	5,380	1,234,880
2033	0	8,506	5,342	1,223,652	1,250	1,238,750	0	14,955	(28,593)	1,112,948	5,380	1,104,690
2034	0	8,498	(926)	1,223,652	1,250	1,232,474	0	14,908	(379)	1,112,948	5,380	1,132,857
2035	0	8,477	13,701	1,223,652	1,250	1,247,080	0	14,871	23,264	1,112,948	5,380	1,156,463

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	West Branch, California Aqueduct (continued)											
	Warne Powerplant						Castaic Powerplant					
	Initial Fill Water (87)	Operational Losses (88)	Reservoir Storage Changes (89)	Deliveries: Water Supply (90)	Deliveries: Recreation (91)	Total (92)	Initial Fill Water (93)	Operational Losses (94)	Reservoir Storage Changes (95)	Deliveries: Water Supply (96)	Deliveries: Recreation (97)	Total (98)
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	0	0	0	0	0	0
1972	0	0	0	0	0	0	57,364	1,788	(6,162)	71,938	6,481	131,409
1973	0	0	0	0	0	0	37,198	6,430	4,542	155,297	1,075	204,542
1974	0	0	0	0	0	0	82,364	1,772	(950)	209,136	541	292,863
1975	0	0	0	0	0	0	90,460	5,002	(1,534)	374,280	1,563	469,771
1976	0	0	0	0	0	0	55,990	(7,695)	(132,036)	420,684	1,429	338,372
1977	0	0	0	0	0	0	0	(1,485)	(102,532)	122,447	(20)	18,410
1978	0	0	0	0	0	0	45,105	(2,264)	129,523	171,139	176	343,679
1979	0	0	0	0	0	0	0	(2,339)	(20,400)	145,598	0	122,859
1980	0	0	0	0	0	0	0	991	(118,026)	165,931	481	49,377
1981	0	0	0	0	0	0	0	(44,416)	47,244	283,264	2,704	288,796
1982	0	24,468	61,169	360,878	2,126	448,641	0	(60,135)	59,069	360,878	1,187	360,999
1983	0	20,780	(74,308)	166,995	6,111	119,578	0	(33,418)	(46,904)	166,995	2,618	89,291
1984	0	13,572	(139,219)	275,212	2,208	151,773	0	(29,618)	(139,545)	275,212	2,201	108,250
1985	0	29,286	141,492	403,097	874	574,749	0	(4,622)	135,007	403,097	844	534,326
1986	0	21,579	25,288	393,203	1,777	441,847	0	(6,664)	21,520	393,203	623	408,682
1987	0	20,885	(10,252)	433,452	5,698	449,783	0	(519)	(6,241)	433,452	2,734	429,426
1988	0	23,253	(31,453)	507,169	3,389	502,358	0	12,650	(28,498)	507,169	1,359	492,680
1989	0	27,131	(40,463)	611,681	6,083	604,432	0	634	(40,154)	611,681	3,161	575,322
1990	0	34,208	(9,176)	791,355	7,491	823,878	0	(14,012)	(1,501)	786,519	3,419	774,425
1991	0	16,908	70,754	263,909	4,166	355,737	0	(871)	89,637	262,921	2,283	353,970
1992	0	9,638	(75,008)	435,661	1,572	371,863	0	(609)	(71,795)	435,661	1,543	364,800
1993	0	1,922	(124,283)	451,257	1,233	330,129	0	21,959	(77,428)	451,257	1,211	396,999
1994	0	23,151	(91,606)	490,819	2,488	424,852	0	5,205	(95,738)	490,819	2,465	402,751
1995	0	15,860	14,330	157,629	1,242	189,061	0	20,400	75,863	157,629	1,223	255,115
1996	0	21,191	27,042	286,066	2,363	336,662	0	(5,621)	22,006	286,066	2,362	304,813
1997	0	29,253	(2,874)	303,745	3,417	333,541	0	23,604	(3,395)	303,734	3,417	327,360
1998	0	26,180	(18,049)	209,532	1,222	218,885	0	26,594	(17,523)	209,525	1,222	219,818
1999	0	14,963	7,089	277,802	5,380	305,234	0	9,261	9,089	277,802	2,330	298,482
2000	0	15,429	74	635,650	5,380	656,533	0	9,708	74	632,500	2,330	644,612
2001	0	15,429	74	625,650	5,380	646,533	0	9,708	74	622,500	2,330	634,612
2002	0	12,499	(12,634)	590,650	5,380	595,895	0	6,209	(19,536)	587,500	2,330	576,503
2003	0	12,292	(26,354)	603,650	5,380	594,968	0	6,007	(26,354)	600,500	2,330	582,483
2004	0	12,115	(16,413)	872,578	5,380	873,660	0	5,830	(16,413)	866,278	2,330	858,025
2005	0	12,455	38,827	889,668	5,380	946,330	0	6,170	38,827	883,368	2,330	930,695
2006	0	12,244	(30,492)	907,921	5,380	895,053	0	5,959	(30,492)	901,621	2,330	879,418
2007	0	12,316	(7,669)	926,588	5,380	936,615	0	6,031	(7,669)	920,288	2,330	920,980
2008	0	12,273	(208)	940,359	5,380	957,804	0	5,988	(208)	934,059	2,330	942,169
2009	0	12,279	3,833	954,130	5,380	975,622	0	5,994	3,833	947,830	2,330	959,987
2010	0	12,273	392	967,899	5,380	985,944	0	5,988	392	961,599	2,330	970,309
2011	0	12,311	6,069	981,669	5,380	1,005,429	0	6,026	6,069	975,369	2,330	989,794
2012	0	12,363	(1,230)	995,437	5,380	1,011,950	0	6,078	(1,230)	989,137	2,330	996,315
2013	0	12,431	11,796	1,009,208	5,380	1,038,815	0	6,146	11,796	1,002,908	2,330	1,023,180
2014	0	12,504	(318)	1,022,978	5,380	1,040,544	0	6,219	(318)	1,016,678	2,330	1,024,909
2015	0	12,596	(4,285)	1,036,745	5,380	1,050,436	0	6,311	(4,285)	1,030,445	2,330	1,034,801
2016	0	12,514	12,121	1,050,516	5,380	1,080,531	0	6,229	12,121	1,044,216	2,330	1,064,896
2017	0	12,676	6,378	1,064,285	5,380	1,088,719	0	6,391	6,378	1,057,985	2,330	1,073,084
2018	0	12,621	2,570	1,078,054	5,380	1,098,625	0	6,336	2,570	1,071,754	2,330	1,082,990
2019	0	12,715	17,590	1,091,824	5,380	1,127,509	0	6,430	17,590	1,085,524	2,330	1,111,874
2020	0	12,885	12,839	1,105,597	5,380	1,136,701	0	6,600	12,839	1,099,297	2,330	1,121,066
2021	0	13,031	(9,096)	1,112,948	5,380	1,122,263	0	6,746	(9,096)	1,106,648	2,330	1,106,628
2022	0	12,905	(7,999)	1,112,948	5,380	1,123,234	0	6,620	(7,999)	1,106,648	2,330	1,107,599
2023	0	12,909	2,286	1,112,948	5,380	1,133,523	0	6,624	2,286	1,106,648	2,330	1,117,888
2024	0	12,850	22,397	1,112,948	5,380	1,153,575	0	6,565	22,397	1,106,648	2,330	1,137,940
2025	0	12,828	(25,417)	1,112,948	5,380	1,105,739	0	6,543	(25,417)	1,106,648	2,330	1,090,104
2026	0	12,893	22,848	1,112,948	5,380	1,154,069	0	6,608	22,848	1,106,648	2,330	1,138,434
2027	0	12,845	(83,642)	1,112,948	5,380	1,047,531	0	6,574	(83,642)	1,106,648	2,330	1,031,910
2028	0	12,656	103,368	1,112,948	5,380	1,234,352	0	6,371	103,368	1,106,648	2,330	1,218,717
2029	0	12,887	(35,667)	1,112,948	5,380	1,095,548	0	6,602	(35,667)	1,106,648	2,330	1,079,913
2030	0	13,056	2,815	1,112,948	5,380	1,134,199	0	6,771	2,815	1,106,648	2,330	1,118,564
2031	0	12,834	(74,125)	1,112,948	5,380	1,057,037	0	6,560	(74,125)	1,106,648	2,330	1,041,413
2032	0	12,594	102,048	1,112,948	5,380	1,232,970	0	6,309	102,048	1,106,648	2,330	1,217,335
2033	0	13,045	(28,593)	1,112,948	5,380	1,102,780	0	6,760	(28,593)	1,106,648	2,330	1,087,145
2034	0	12,998	(379)	1,112,948	5,380	1,130,947	0	6,713	(379)	1,106,648	2,330	1,115,312
2035	0	12,961	23,264	1,112,948	5,380	1,154,553	0	6,676	23,264	1,106,648	2,330	1,138,918

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)						
	Coastal Branch, California Aqueduct						
	Las Perillas and Badger Hill Pumping Plants				Devil's Den, Bluestone, and Polonio Pass Pumping Plants		
	Initial Fill Water (99)	Operational Losses (100)	Water Supply Delivery (101)	Total (102)	Operational Losses (103)	Water Supply Delivery (104)	Total (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	12,831	120,969	133,800	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	5,802	1,496	7,298	0	0	0
1992	0	7,893	79,635	87,528	0	0	0
1993	0	9,282	94,921	104,203	0	0	0
1994	0	8,414	87,158	95,572	0	0	0
1995	0	6,979	94,536	101,515	0	0	0
1996	0	9,663	114,630	124,293	0	0	0
1997	0	9,730	115,450	125,180	0	8,691	8,691
1998	(15)	8,430	109,403	117,818	0	22,210	22,210
1999	0	802	136,329	137,131	212	31,003	31,215
2000	0	802	176,186	176,988	212	70,486	70,698
2001	0	802	176,186	176,988	212	70,486	70,698
2002	0	802	176,186	176,988	212	70,486	70,698
2003	0	802	176,186	176,988	212	70,486	70,698
2004	0	802	176,839	177,641	212	70,486	70,698
2005	0	802	173,519	174,321	212	70,486	70,698
2006	0	802	169,036	169,838	212	70,486	70,698
2007	0	802	164,139	164,941	212	70,486	70,698
2008	0	802	164,139	164,941	212	70,486	70,698
2009	0	802	164,139	164,941	212	70,486	70,698
2010	0	802	164,139	164,941	212	70,486	70,698
2011	0	802	164,139	164,941	212	70,486	70,698
2012	0	802	164,139	164,941	212	70,486	70,698
2013	0	802	164,139	164,941	212	70,486	70,698
2014	0	802	164,139	164,941	212	70,486	70,698
2015	0	802	164,139	164,941	212	70,486	70,698
2016	0	802	164,139	164,941	212	70,486	70,698
2017	0	802	164,139	164,941	212	70,486	70,698
2018	0	802	164,139	164,941	212	70,486	70,698
2019	0	802	164,139	164,941	212	70,486	70,698
2020	0	802	164,139	164,941	212	70,486	70,698
2021	0	802	164,139	164,941	212	70,486	70,698
2022	0	802	164,139	164,941	212	70,486	70,698
2023	0	802	164,139	164,941	212	70,486	70,698
2024	0	802	164,139	164,941	212	70,486	70,698
2025	0	802	164,139	164,941	212	70,486	70,698
2026	0	802	164,139	164,941	212	70,486	70,698
2027	0	802	164,139	164,941	212	70,486	70,698
2028	0	802	164,139	164,941	212	70,486	70,698
2029	0	802	164,139	164,941	212	70,486	70,698
2030	0	802	164,139	164,941	212	70,486	70,698
2031	0	802	164,139	164,941	212	70,486	70,698
2032	0	802	164,139	164,941	212	70,486	70,698
2033	0	802	164,139	164,941	212	70,486	70,698
2034	0	802	164,139	164,941	212	70,486	70,698
2035	0	802	164,139	164,941	212	70,486	70,698

Table B-7

Reconciliation of Capital Costs Allocated to Water Supply and Water Generation

(Thousands of Dollars).

Item	Project Costs Allocated to Water Supply and Power Generation							Capital Costs Allocated to Other Purposes (8)	Total State Water Project Capital Cost (9)
	Miscellaneous Income Credited to Construction (a (1)	Allowance for Future Price Escalation (b (2)	Costs of Construction of Delivery Structures (c (3)	Costs of Requested Excess Capacity and Future Enlargement (d (4)	Capital Cost Component of Delta Water Charge (e (5)	Capital Cost Component of Transportation Water Charge (f (6)	Water Supply and Power Total (7)		
Conservation Facilities									
Upper Feather Division									
Frenchman Dam and Lake	180	0	0	0	603	0	754	2,888	3,642
Grizzly Valley Dam and Lake Davis	65	0	0	0	39	0	94	7,378	7,472
Antelope Dam and Lake	1	0	0	0	0	0	1	5,534	5,535
Abbey Bridge Dam and Reservoir	0	0	0	0	0	0	0	519	519
Dixie Refuge Dam and Reservoir	0	0	0	0	0	0	0	236	236
Total, Upper Feather Division	246	0	0	0	642	0	849	16,555	17,404
Oroville Division									
Multipurpose Facilities	3,127	152	0	0	375,950	0	381,448	90,795	472,243
Specific Power Facilities	230	0	0	0	96,439	0	96,832	568	97,400
Total, Oroville Division	3,357	152	0	0	472,389	0	478,280	91,363	569,643
California Aqueduct									
North San Joaquin Division	178	104	0	0	80,825	0	82,199	2,880	85,079
San Luis Division	11,774	73	0	0	105,720	0	88,107	3,827	91,934
Total, California Aqueduct	11,952	177	0	0	186,545	0	170,306	6,707	177,013
Delta Facilities	32,743	10,920	0	0	329,556	0	419,520	47,886	467,406
Planning and Pre-operation	5,279	14,006	0	0	99,910	0	110,959	0	110,959
Total, Conservation Facilities	53,577	25,255	0	0	1,089,042	0	1,179,914	162,511	1,342,425
Transportation Facilities									
Upper Feather Division									
Grizzly Valley Pipeline	0	0	181	0	0	341	525	0	525
North Bay Aqueduct	265	2	676	0	0	92,911	94,238	0	94,238
South Bay Aqueduct	1,782	54	1,636	0	0	55,806	59,583	21,673	81,256
California Aqueduct									
North San Joaquin Division	396	232	51	0	0	179,981	179,767	6,409	186,176
San Luis Division	8,321	2,147	0	0	0	152,398	190,830	10,346	201,176
South San Joaquin Division	316	80	3,444	2,093	0	285,810	292,313	16,708	309,021
Tehachapi Division	26	231	0	5,230	0	303,518	308,980	18,328	327,308
Mojave Division	911	444	771	0	0	312,158	325,941	37,946	363,887
Santa Ana Division	1,166	129	5,804	5,331	0	218,026	234,118	32,032	266,150
West Branch	37,574	508	522	37	0	478,917	516,136	33,946	550,082
Coastal Branch	192	1,215	93	0	0	506,871	506,871	0	506,871
Total, California Aqueduct	48,902	4,986	10,685	12,691	0	2,437,679	2,554,956	155,715	2,710,671
Total, Transportation Facilities	50,949	5,042	13,178	12,691	0	2,586,737	2,709,302	177,388	2,886,690
East Branch Enlargement	0	0	0	0	0	441,307	441,307	0	441,307
East Branch Extension	0	0	0	0	0	96,961	96,961	0	96,961
Coastal Branch Extension	0	0	0	0	0	26,361	26,361	0	26,361
San Joaquin Drainage Facilities	0	8,192	0	0	0	0	8,192	89,646	97,838
Off-Aqueduct Power Generation Facilities	0	0	0	0	0	454,786	454,786	0	454,786
Small Hydro Power Generation Facilities	0	0	0	0	14,095	76,069	90,164	0	90,164
Land Purchase - Kern Water Bank	0	0	0	0	34,686	0	34,686	0	34,686
Unassigned/Miscellaneous	0	308	0	0	0	0	2,297	305	2,602
Davis - Grunsky	0	1,334	0	0	0	0	1,334	128,666	130,000
Total through 2010	104,526	40,131	13,178	12,691	1,137,823	3,682,221	5,045,304	558,516	5,603,820

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, 1998.
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. Planning and Preoperations line item includes $50,534.00 of planning costs financed from Systems Revenues and not included in Table 14-3. Oroville Division total reduced by $14,095,000 for costs included under Small Hydro.
f) See Table B-10. Mojave division total reduced by $76,069,000 for costs included under Small Hydro.

Table B-8

State Water Project Capital Costs of Requested Delivery Structures

(Dollars)

Project Service Area and Water Supply Contractor	*Calendar Year Capital Costs (a*						*Total*
	1952-1996 (1)	*1997 (2)*	*1998 (3)*	*1999 (4)*	*2000 (5)*	*2001 (6)*	*(7)*
FEATHER RIVER AREA							
County of Butte	136,546	0	0	0	0	0	136,546
Plumas County Flood Control and Water Conservation District	645	0	0	0	0	0	645
Thermalito Irrigation District (b	43,939	0	0	0	0	0	43,939
Subtotal	181,130	0	0	0	0	0	181,130
NORTH BAY AREA							
Napa County Flood Control and Water Conservation District	13,590	0	0	0	0	0	13,590
Solano County Water Agency	662,113	0	0	0	0	0	662,113
Subtotal	675,703	0	0	0	0	0	675,703
SOUTH BAY AREA							
Alameda County Flood Control and Water Conservation District, Zone 7	251,126	240	14,536	30,000	20,000	0	315,902
Alameda County Water District	232,484	0	0	0	0	0	232,484
Santa Clara Valley Water District	21,500	0	0	0	0	0	21,500
San Francisco Water Department (b	1,062,504	3,703	0	0	0	0	1,066,207
Subtotal	1,567,614	3,943	14,536	30,000	20,000	0	1,636,093
CENTRAL COASTAL AREA							
San Luis Obispo County Flood Control and Water Conservation District	9,192	0	17,012	0	0	0	26,204
Santa Barbara County Flood Control and Water Conservation District	67,058	0	0	0	0	0	67,058
Subtotal	76,250	0	17,012	0	0	0	93,262
SAN JOAQUIN VALLEY AREA							
Castaic Lake Water Agency	82,567	0	0	0	0	0	82,567
Dudley Ridge Water District	298,031	4,652	1,858	0	0	0	304,541
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	2,746,970	13,403	36,022	47,000	12,000	0	2,855,395
Oak Flat Water District	46,882	0	0	0	0	0	46,882
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	3,342	0	0	0	0	0	3,342
Subtotal	3,467,953	18,055	37,880	47,000	12,000	0	3,582,888
SOUTHERN CALIFORNIA AREA							
Antelope Valley-East Kern Water Agency	384,750	0	10,333	35,000	8,000	0	438,083
Castaic Lake Water Agency	354,745	0	0	0	0	0	354,745
Coachella Valley Water District	14,206	0	0	0	0	0	14,206
Crestline-Lake Arrowhead Water Agency	25,096	202	0	0	0	0	25,298
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	191,703	19,032	1,030	0	0	0	211,765
Palmdale Water District	34,173	0	0	0	0	0	34,173
San Bernardino Valley Municipal Water District	801,669	0	0	0	0	0	801,669
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	4,804,320	0	0	0	0	0	4,804,320
Ventura County Flood Control District	79,699	0	0	0	0	0	79,699
Subtotal	6,935,113	19,234	11,363	35,000	8,000	0	7,008,710
Total	12,827,513	41,232	63,779	112,000	40,000	0	13,177,786

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

(Dollars)

Calendar Year	Total Advance Payments and Credits for Excess Capacity (1)	Incremental Costs for Excess Capacity (2)	Overpayment (+) or Underpayment (-) (a (3)	Annual Surplus Money Investment Fund Interest Rate (b January-June (4)	July-December (5)	Net Over or Underpayment With Interest (c (6)
	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

(Dollars)

Reach Number	Annual Required Advance Of Funds — Incremental Costs and Advance Payments by Calendar Year													Reach Total
	1965 (7)	1966 (8)	1967 (9)	1968 (10)	1969 (11)	1970 (12)	1971 (13)	1972 (14)	1973 (15)	1974 (16)	1975 (17)	1976 (18)	1981 (19)	(20)
	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 Adjustment													
	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 1981.

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	Upper Feather Division (1)	North Bay Aqueduct					South Bay Aqueduct			
		Reach 1 (2)	Reach 2 (3)	Reach 3A (4)	Reach 3B (5)	Total (6)	Reach 1 (7)	Reach 2 (8)	Reach 4 (9)	Reach 5 (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	430,992	147,295	(10,752)	43,157	610,692	(145,428)	3,600	6,533	12,448
1982	11	934,812	357,720	(7,165)	134,408	1,419,775	(44,778)	18,971	7,451	37,824
1983	19	1,091,091	1,076,627	2,628	517,615	2,687,961	429,225	73,925	38,185	72,415
1984	26	1,875,968	2,317,661	3,290	1,068,363	5,265,282	506,951	36,354	9,610	92,846
1985	29	2,248,491	7,849,886	27,815	3,416,370	13,542,562	34,103	2,822	5,034	27,138
1986	31	16,420,238	10,020,277	1,309,599	1,819,349	29,569,463	85,732	14,715	17,144	13,982
1987	32	11,873,826	7,214,307	1,628,932	1,670,596	22,387,661	126,377	15,693	27,881	32,931
1988	55	3,287,756	1,648,338	1,015,956	686,821	6,638,871	290,505	36,744	51,786	25,078
1989	44	1,056,583	950,985	224,567	374,886	2,607,021	130,609	16,848	35,518	12,582
1990	63	493,522	537,881	145,694	71,727	1,248,824	251,023	29,908	97,753	38,558
1991	54	76,625	17,131	24,856	70,560	189,172	1,153,336	26,917	53,623	21,915
1992	42	56,898	6,636	18,337	38,000	119,871	402,413	53,080	61,943	52,446
1993	30	104,317	24,579	40,129	82,032	251,057	313,475	55,679	79,149	39,294
1994	14	68,065	13,463	27,107	45,909	154,544	(211,712)	29,017	362,585	36,350
1995	3	26,002	5,920	7,337	20,617	59,876	265,750	42,516	48,189	21,436
1996	0	14,790	3,334	6,614	14,606	39,344	139,573	13,049	25,751	10,677
1997	3	67,259	35,544	38,583	(13,573)	127,813	203,457	31,111	36,983	16,907
1998	12	16,569	6,959	7,169	10,869	41,566	72,062	6,318	15,861	5,126
1999	0	6,657	5,500	5,500	5,500	23,157	109,513	32,500	0	0
2000	0	1,074	0	0	0	1,074	385,545	0	0	0
2001	0	1,074	0	0	0	1,074	25,545	0	0	0
2002	0	1,074	0	0	0	1,074	25,545	0	0	0
2003	0	1,074	0	0	0	1,074	25,545	0	0	0
2004	0	950	0	0	0	950	22,593	0	0	0
2005	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	341,070	41,713,766	32,980,769	4,545,472	13,670,742	92,910,749	19,300,807	1,772,317	5,247,485	11,167,039

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	South Bay Aqueduct (continued)					California Aqueduct			
						North San Joaquin Division			
	Reach 6 (11)	Reach 7 (12)	Reach 8 (13)	Reach 9 (14)	Total (15)	Reach 1 (16)	Reach 2A (17)	Reach 2B (18)	Subtotal (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	1,462	1,398	5,077	(114,602)	(502,921)	1,487,516	38,451	1,023,046
1982	716	1,561	1,746	6,074	29,565	700,738	46,501	22,308	769,547
1983	407	5,721	8,143	23,367	651,388	706,104	84,435	211,619	1,002,158
1984	269	1,853	1,667	13,301	662,851	1,559,539	41,352	48,478	1,649,369
1985	402	1,657	2,129	6,750	80,035	677,955	24,812	19,404	722,171
1986	1,119	2,744	3,313	12,234	150,983	398,788	63,830	35,420	498,038
1987	1,496	3,081	3,560	21,842	232,861	799,672	88,945	41,659	930,276
1988	5,706	6,689	7,603	33,728	457,839	2,898,155	(128,051)	(56,448)	2,713,656
1989	2,641	3,878	4,755	14,489	221,320	6,898,872	346,589	173,993	7,419,454
1990	5,071	19,811	36,511	86,384	565,019	13,450,028	111,042	2,410,089	15,971,159
1991	1,942	5,061	7,359	31,693	1,301,846	13,916,587	133,136	115,025	14,164,748
1992	1,203	2,176	2,414	35,803	611,478	6,263,298	242,871	240,124	6,746,293
1993	3,618	6,028	8,873	42,200	548,316	2,542,869	257,330	200,072	3,000,271
1994	2,897	4,781	5,346	89,991	319,255	1,145,666	148,396	88,357	1,382,419
1995	11,556	3,635	14,769	24,750	432,601	1,462,203	217,940	131,995	1,812,138
1996	3,092	2,271	2,699	12,522	209,634	872,497	74,153	41,215	987,865
1997	1,454	4,141	3,654	20,587	318,294	2,123,660	146,841	84,296	2,354,797
1998	411	1,377	1,246	6,544	108,945	1,492,168	36,474	19,778	1,548,420
1999	0	0	0	0	142,013	1,300,901	36,660	122,643	1,460,204
2000	0	0	0	0	385,545	1,882,378	7,665	9,332	1,899,375
2001	0	0	0	0	25,545	1,267,885	0	0	1,267,885
2002	0	0	0	0	25,545	195,699	0	0	195,699
2003	0	0	0	0	25,545	195,699	0	0	195,699
2004	0	0	0	0	22,593	173,083	0	0	173,083
2005	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	561,620	3,877,354	4,912,148	8,967,101	55,805,962	114,250,111	42,377,085	23,354,244	179,981,440

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	San Luis Division						South San Joaquin Division		
	Reach 3 (20)	Reach 4 (21)	Reach 5 (22)	Reach 6 (23)	Reach 7 (24)	Subtotal (25)	Reach 8C (26)	Reach 8D (27)	Reach 9 (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	13,350	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	28,491	(2,244,127)	(44,017)	(15,456)	918,984	(1,356,125)	1,151	9,642	9,541
1982	100,629	(1,616,569)	20,184	10,359	3,525,738	2,040,341	2,469	8,283	6,956
1983	75,639	33,881	11,785	6,638	1,811,638	1,939,581	7,955	13,782	11,090
1984	31,748	87,083	26,712	12,754	3,053,662	3,211,959	26,489	9,959	6,268
1985	53,243	56,733	13,685	6,934	582,927	713,522	7,220	9,762	7,688
1986	73,979	201,509	50,668	19,223	1,282,469	1,627,848	8,902	25,011	20,503
1987	(7,829)	116,268	40,009	15,946	518,349	682,743	12,744	18,927	56,042
1988	(149,385)	224,154	(406,398)	(137,353)	923,622	454,640	9,833	(119,741)	(60,639)
1989	39,652	594,894	232,852	80,090	575,855	1,523,343	5,279	91,501	278,061
1990	23,631	234,660	75,722	27,931	447,117	809,061	5,751	40,824	2,012,120
1991	4,916,156	399,663	98,879	35,872	511,585	5,962,155	4,588	43,145	41,361
1992	(756,456)	547,435	212,924	74,803	397,229	475,935	3,566	104,182	109,540
1993	110,233	724,930	186,271	70,815	720,283	1,812,532	15,016	101,634	90,929
1994	1,153,900	294,309	70,256	28,729	665,046	2,212,240	6,770	42,455	40,696
1995	285,776	441,472	130,761	58,640	1,914,186	2,830,835	12,548	49,963	43,251
1996	31,942	(110,727)	34,529	12,219	588,712	556,675	6,444	29,863	27,050
1997	73,207	513,581	103,293	42,875	5,015,293	5,748,249	11,496	49,108	43,796
1998	26,293	344,458	40,755	18,970	3,123,058	3,553,534	2,759	11,926	10,010
1999	340,249	202,745	148,994	31,119	8,575,170	9,298,277	943	25,932	6,129
2000	330,377	17,445	5,658	1,886	10,719,081	11,074,447	471	2,357	1,886
2001	0	0	0	0	7,367,659	7,367,659	0	0	0
2002	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	21,368,725	31,036,203	22,618,972	5,893,983	71,480,316	152,398,199	846,982	12,974,929	11,019,021

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	South San Joaquin Division (continued)								
	Reach 10A (29)	Reach 11B (30)	Reach 12D (31)	Reach 12E (32)	Reach 13B (33)	Reach 14A (34)	Reach 14B (35)	Reach 14C (36)	Reach 15A (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	706,277	529,082	3,704,066	15,112,041	1,223,457	1,134,395	9,523,012
1970	74,366	85,151	70,726	72,800	320,801	11,031,261	987,219	738,959	8,836,898
1971	15,595	45,008	43,996	42,628	339,078	2,925,199	193,262	36,518	3,275,229
1972	19,736	32,663	43,962	24,760	81,937	1,388,370	101,803	20,177	1,003,385
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	10,309	14,885	26,473	20,972	25,515	(1,076,221)	27,551	33,674	(1,142,721)
1982	8,237	6,608	7,680	8,346	16,339	(745,914)	9,886	29,393	(804,147)
1983	14,488	9,792	14,174	13,050	35,872	419,650	17,389	24,933	115,984
1984	7,533	27,613	87,907	49,271	22,732	54,590	75,453	63,060	63,537
1985	9,215	6,949	5,263	8,013	8,875	(49,408)	9,523	5,867	54,782
1986	22,335	16,664	16,014	25,031	20,483	140,642	25,960	13,913	154,089
1987	16,704	13,512	12,369	20,023	15,435	101,453	20,411	8,581	227,047
1988	(159,357)	(73,648)	(151,040)	(51,401)	(120,104)	161,077	(75,276)	(75,307)	144,369
1989	70,153	65,216	63,382	120,925	73,037	2,778,880	119,559	36,660	2,952,046
1990	32,485	26,992	25,080	44,767	33,766	619,706	41,883	14,344	414,082
1991	36,897	32,205	30,155	55,132	34,150	424,194	50,354	12,119	354,552
1992	103,660	100,217	98,594	192,732	98,197	993,886	185,659	9,513	389,309
1993	90,291	70,131	63,247	118,440	80,530	687,462	109,792	38,960	942,212
1994	65,737	29,221	26,997	50,234	35,154	400,534	44,481	17,426	324,942
1995	435,909	32,487	25,516	49,885	41,733	524,521	48,740	29,125	450,948
1996	253,433	19,489	15,020	30,202	29,333	402,997	26,945	16,405	253,489
1997	73,450	30,888	25,367	48,764	40,898	451,803	47,811	29,876	809,740
1998	16,447	7,703	6,257	11,528	10,593	103,536	11,520	7,491	122,427
1999	5,186	9,901	4,715	8,487	6,129	335,236	550,712	1,886	98,072
2000	1,414	1,414	1,414	2,357	1,886	14,145	359,754	471	12,259
2001	0	0	0	0	0	0	49,507	0	0
2002	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	10,167,260	12,504,079	11,146,526	8,161,796	16,014,664	65,285,425	9,979,289	7,110,175	46,212,387

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	South San Joaquin (contd.)		Tehachapi Division			Mojave Division			
	Reach 16A (38)	Subtotal (39)	Reach 17E (40)	Reach 17F (41)	Subtotal (42)	Reach 18A (43)	Reach 19 (44)	Reach 19C (45)	Reach 20A (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	45,702,918	40,368,425	6,883,206	47,251,631	213,805	2,465,641	7,423	5,939,151
1970	13,890,751	36,322,869	35,446,706	6,786,231	42,232,937	2,211,077	1,210,665	6,217	3,652,478
1971	7,903,947	14,885,460	20,141,395	6,835,304	26,976,699	1,496,843	284,740	6,994	1,074,761
1972	3,025,570	5,783,134	10,002,935	34,791	10,037,726	129,417	409,903	3,620	471,964
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	633,284	339,536	10,831	37,085
1980	3,772,498	7,372,362	17,433,610	6,046	17,439,656	1,141,829	1,073,430	3,604	308,188
1981	(2,527,211)	(4,566,440)	(3,848,206)	6,908	(3,841,298)	1,226,519	845,702	4,498	48,625
1982	(1,850,736)	(3,296,600)	11,370,112	6,054	11,376,166	7,054,354	746,900	3,920	33,869
1983	166,232	864,391	8,862,914	8,269	8,871,183	11,038,206	64,660	2,596	40,793
1984	119,387	613,799	3,227,937	31,701	3,259,638	8,382,266	309,491	3,124	17,505
1985	82,117	165,866	1,926,289	10,460	1,936,749	5,269,457	252,781	3,885	72,697
1986	186,348	675,895	1,381,955	33,788	1,415,743	2,093,799	2,324,852	4,261	2,510,915
1987	194,936	718,184	671,183	13,807	684,990	1,348,349	47,754	4,684	623,872
1988	262,334	(308,900)	1,408,758	(49,734)	1,359,024	848,011	(97,836)	13,409	(64,075)
1989	5,955,356	12,610,055	504,715	64,660	569,375	376,980	218,892	50,953	150,246
1990	603,226	3,915,026	750,129	25,062	775,191	199,673	(398,229)	35,291	(586,104)
1991	776,110	1,894,962	698,244	33,426	731,670	273,090	38,269	81,608	(165,185)
1992	734,428	3,123,483	752,669	26,383	779,052	621,517	387,469	86,644	228,292
1993	857,039	3,265,683	1,223,403	35,370	1,258,773	1,131,166	249,370	72,746	111,781
1994	853,328	1,937,975	806,213	16,681	822,894	998,126	164,210	60,147	51,511
1995	628,933	2,373,559	1,538,468	19,443	1,557,911	390,433	157,481	45,990	92,925
1996	387,772	1,498,442	2,570,007	10,797	2,580,804	91,593	69,281	22,188	35,656
1997	481,239	2,144,236	1,008,492	18,262	1,026,754	135,351	92,588	13,585	65,418
1998	444,229	766,426	921,902	8,042	929,944	47,809	37,704	4,619	31,637
1999	475,743	1,529,071	572,382	3,300	575,682	33,948	206,045	0	40,077
2000	16,502	416,330	243,150	943	244,093	3,300	4,243	0	3,300
2001	0	49,507	221,933	0	221,933	0	0	0	0
2002	0	0	221,933	0	221,933	0	0	0	0
2003	0	0	221,933	0	221,933	0	0	0	0
2004	0	0	196,286	0	196,286	0	0	0	0
2005	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	74,387,792	285,810,325	248,970,836	54,547,035	303,517,871	50,761,242	24,036,794	724,691	18,395,693

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	Mojave Division (continued)							*Santa Ana Division*	
Calendar Year	*Reach 20B (47)*	*Reach 21 (48)*	*Reach 22A (49)*	*Reach 22B (50)*	*Reach 23 (51)*	*Reach 24 (52)*	*Subtotal (53)*	*Reach 25 (54)*	*Reach 26A (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	1,091,124	825,071	432,464	16,772,680	1,922,115	5,385,721	29,292,513	1,135,248	9,811,736
1972	635,509	484,773	324,866	3,788,899	48,049	788,594	7,085,594	1,095,740	5,528,987
1973	83,840	63,774	36,179	1,623,274	24,333	4,226,019	6,247,943	136,994	1,810,729
1974	118,639	103,545	54,198	5,699,605	130,567	766,570	7,248,480	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	210,602	1,712,061	57,463	131,076
1979	36,225	18,948	10,675	560,506	10,634	103,615	1,761,339	29,960	80,482
1980	284,545	133,526	121,171	2,239,224	64,447	559,963	5,929,927	31,462	181,638
1981	32,214	13,223	6,466	(774,614)	160,862	203,941	1,767,436	5,864	69,031
1982	77,988	13,158	14,459	432,274	437,307	79,819	8,894,048	9,224	159,280
1983	58,714	25,900	10,363	451,428	2,198,410	58,989	13,950,059	4,304	528,764
1984	35,378	845,423	6,052	(38,439)	1,369,400	34,764	10,964,964	3,850	270,455
1985	(201,541)	(432,054)	1,985,548	663,873	974,482	51,634	8,640,762	5,555	97,740
1986	(1,918,884)	(1,245,542)	3,328,851	1,200,178	233,873	51,994	8,584,297	9,927	233,121
1987	(306,867)	78,262	66,943	4,567,279	159,447	91,223	6,680,946	4,908	262,960
1988	(48,680)	44,804	353,769	1,312,128	598,571	197,761	3,157,862	7,358	678,662
1989	184,575	173,287	538,135	4,801,831	1,574,239	433,072	8,502,210	8,092	160,042
1990	(394,531)	(585,371)	(86,909)	9,907,482	1,562,744	343,467	9,997,513	176,839	198,933
1991	276	(123,312)	(11,930)	9,166,084	3,977,941	139,124	13,375,965	202,297	412,901
1992	340,998	(261,533)	76,195	5,399,784	9,256,005	129,623	16,264,994	334,997	(836,716)
1993	181,681	134,625	49,486	2,226,947	17,439,915	159,211	21,756,928	1,506,787	5,750,553
1994	114,387	65,488	26,717	978,792	8,666,879	81,869	11,208,126	2,104,588	3,804,967
1995	121,499	66,503	30,918	1,109,661	6,312,630	123,653	8,451,693	3,310,564	832,531
1996	48,699	44,953	17,787	2,079,384	2,306,157	96,339	4,812,037	19,019,751	446,840
1997	39,960	55,872	27,860	831,725	(160,962)	102,370	1,203,767	7,644,666	(467,095)
1998	30,620	21,393	13,173	294,558	3,427,759	39,830	3,949,102	999,132	1,735,302
1999	178,227	281,957	718,094	2,679,063	63,652	3,281,168	7,482,231	305,060	37,248
2000	3,300	107,030	696,877	2,440,484	17,917	2,829	3,279,280	119,289	9,901
2001	0	0	0	0	16,502	0	16,502	16,502	0
2002	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	18,141,403	9,093,194	14,389,649	133,248,472	64,820,371	54,615,885	388,227,394	60,520,722	52,090,605

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	Santa Ana Division (continued)				West Branch				
Calendar Year	Reach 28G (a (56)	Reach 28H (57)	Reach 28J (58)	Subtotal (59)	Reach 29A (60)	Reach 29F (61)	Reach 29G (62)	Reach 29H (63)	Reach 29J (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	59,102	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	66,420	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	4,247,038	3,768,707	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	426,950	985,512	18,787,724	(23,015,732)
1973	209,665	247,769	3,673,544	6,078,701	775,824	168,064	399,856	9,409,021	1,821,206
1974	162,178	101,638	1,981,273	4,236,268	560,657	168,878	169,717	3,901,557	(3,454,239)
1975	157,365	124,399	1,626,313	5,862,527	353,670	421,176	925,693	664,124	609,891
1976	178,287	118,748	1,497,482	3,764,443	396,809	650,417	1,274,484	706,248	650,209
1977	127,106	89,036	323,091	1,391,573	390,637	3,018,637	2,152,961	196,012	1,135,148
1978	147,112	153,867	348,806	838,324	1,427,190	2,219,135	6,694,615	57,817	149,932
1979	29,723	19,225	227,470	386,860	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	28,815	22,654	61,349	187,713	(711,751)	2,699,873	19,806,531	94,944	28,852
1982	16,069	58,900	55,841	299,314	(465,217)	351,251	17,964,617	215,678	42,587
1983	18,213	89,581	(264,804)	376,058	100,394	180,971	6,751,649	220,029	24,295
1984	14,462	12,259	49,547	350,573	71,759	68,930	2,870,259	335,942	17,285
1985	17,816	11,481	54,070	186,662	142,244	25,386	2,126,670	102,366	21,971
1986	31,564	25,037	86,794	386,443	133,914	62,294	274,660	141,894	36,149
1987	17,141	8,005	45,528	338,542	13,936	453,949	711,773	192,511	27,931
1988	41,892	21,113	90,784	839,809	427,544	118,010	1,660,959	203,130	95,930
1989	28,708	12,619	51,556	261,017	207,067	430,662	584,186	241,811	97,472
1990	27,047	12,631	54,595	470,045	194,727	311,892	362,683	812,508	54,029
1991	142,148	15,533	62,817	835,696	219,849	344,525	453,436	1,132,538	55,216
1992	35,031	14,261	71,695	(380,732)	542,293	296,120	467,715	4,404,283	50,994
1993	44,300	27,047	162,854	7,491,541	464,987	320,182	643,189	3,361,457	74,199
1994	16,351	11,673	54,581	5,992,160	203,666	231,527	362,717	306,148	33,758
1995	35,402	28,202	164,254	4,370,953	344,356	392,647	536,253	468,656	34,007
1996	76,723	73,629	344,747	19,961,690	150,818	161,394	427,223	203,201	15,357
1997	50,654	20,717	268,156	7,517,098	297,925	71,304	432,650	276,144	34,536
1998	12,042	10,523	500,189	3,257,188	351,855	22,064	2,036,686	187,565	15,290
1999	782,218	411,619	719,037	2,255,182	755,814	153,237	5,911,195	16,974	18,860
2000	471	42,435	697,348	869,444	623,794	121,647	4,317,525	3,300	17,351
2001	0	0	0	16,502	0	16,502	0	0	0
2002	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	24,962,418	24,053,041	56,399,695	218,026,481	37,591,144	32,054,454	133,797,696	63,097,311	75,052,312

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

(Dollars)

Calendar Year	California Aqueduct (continued)								
	West Branch (continued)		Coastal Branch						
	Reach 30 (65)	Subtotal (66)	Reach 31A (67)	Reach 33A (68)	Reach 34 (69)	Reach 35 (70)	Subtotal (71)	Total (72)	Grand Total (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	182,530,031	184,473,498
1970	22,330,328	50,497,652	269,194	24,368	851	2,787	297,200	206,720,798	207,082,674
1971	16,890,503	40,115,154	164,446	32,230	1,315	3,804	201,795	158,414,094	158,624,800
1972	3,818,197	2,874,482	131,332	17,601	522	1,660	151,115	68,229,128	68,362,749
1973	13,426,356	26,000,327	182,493	16,154	542	1,758	200,947	45,111,615	45,264,645
1974	2,988,629	4,335,199	190,866	18,799	463	1,405	211,533	24,037,096	24,403,063
1975	1,808,590	4,783,144	64,582	36,012	2,255	6,656	109,505	21,066,173	21,319,243
1976	1,253,297	4,931,464	198,266	68,898	5,088	14,988	287,240	17,184,212	17,493,161
1977	345,023	7,238,418	918,473	81,305	1,834	5,387	1,006,999	15,165,801	15,544,382
1978	766,447	11,315,136	52,994	83,300	1,302	3,852	141,448	18,665,847	19,123,881
1979	282,145	24,133,453	38,182	108,951	1,505	4,433	153,071	31,210,310	31,865,554
1980	2,055,206	32,733,044	189,070	380,825	1,183	3,523	574,601	73,911,613	75,007,345
1981	275,460	22,193,909	19,897	(152,747)	1,458	4,335	(127,057)	15,281,184	15,777,308
1982	351,376	18,460,292	(16,381)	(91,659)	619	1,862	(105,559)	38,437,549	39,886,900
1983	566,545	7,843,883	85,496	72,063	824	2,475	160,858	35,008,171	38,347,539
1984	1,118,954	4,483,129	28,568	59,125	1,019	3,037	91,749	24,625,180	30,553,339
1985	284,243	2,702,880	36,834	59,367	2,142	6,344	104,687	15,173,299	28,795,925
1986	213,353	862,264	82,358	228,184	17,489	51,358	379,389	14,429,917	44,150,394
1987	158,313	1,558,413	53,817	1,066,263	92,531	273,036	1,485,647	13,079,741	35,700,295
1988	222,068	2,727,641	183,853	1,145,781	99,484	293,683	1,722,801	12,666,533	19,763,298
1989	148,674	1,709,872	84,679	898,207	77,304	228,091	1,288,281	33,883,607	36,711,992
1990	118,083	1,853,922	126,563	1,091,423	103,781	277,872	1,599,639	35,391,556	37,205,462
1991	229,367	2,434,931	164,743	1,635,086	123,575	363,800	2,287,204	41,687,331	43,178,403
1992	211,561	5,972,966	183,830	3,076,176	176,672	478,156	3,914,834	36,896,825	37,628,216
1993	296,349	5,160,363	344,927	10,811,750	1,065,017	629,724	12,851,418	56,597,509	57,396,912
1994	168,426	1,306,242	282,150	44,382,479	4,507,725	2,366,464	51,538,818	76,400,874	76,874,687
1995	304,983	2,080,902	1,196,326	106,366,315	10,207,131	4,052,045	121,821,817	145,299,808	145,792,288
1996	98,522	1,056,515	948,731	61,121,845	29,681,915	2,321,470	94,073,961	125,527,989	125,776,967
1997	233,914	1,346,473	562,314	19,337,262	8,004,046	1,410,115	29,313,737	50,655,111	51,101,221
1998	73,181	2,686,641	252,934	5,131,724	1,852,902	972,561	8,210,121	24,901,376	25,051,899
1999	722,809	7,578,889	36,000	15,000,000	0	0	15,036,000	45,215,536	45,380,706
2000	698,291	5,781,908	23,000	13,200,000	0	0	13,223,000	36,787,877	37,174,496
2001	0	16,502	20,000	2,000,000	0	0	2,020,000	10,976,490	11,003,109
2002	0	0	20,000	0	0	0	20,000	437,632	464,251
2003	0	0	20,000	0	0	0	20,000	437,632	464,251
2004	0	0	20,000	0	0	0	20,000	389,369	412,912
2005	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	137,323,459	478,916,376	20,030,531	287,661,285	56,061,010	13,849,695	377,602,521	2,384,381,750	2,533,538,388

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	Upper Feather Division (1)	North Bay Aqueduct					South Bay Aqueduct			
		Reach 1 (2)	Reach 2 (3)	Reach 3A (4)	Reach 3B (5)	Total (6)	Reach 1 (7)	Reach 2 (8)	Reach 4 (9)	Reach 5 (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	50,285
1979	3,235	0	0	0	73,852	73,852	650,826	76,849	212,827	91,387
1980	416	0	0	0	81,769	81,769	1,128,840	212,974	242,119	110,786
1981	3,847	0	0	0	101,340	101,340	884,764	130,127	167,121	204,816
1982	10,956	0	0	0	191,987	191,987	1,156,605	141,718	249,448	95,962
1983	(422)	0	0	0	80,215	80,215	1,258,144	84,360	373,876	152,241
1984	643	0	0	0	139,106	139,106	1,999,008	113,821	340,418	40,762
1985	2,599	0	0	0	259,516	259,516	2,044,121	207,478	427,931	247,313
1986	2,595	0	0	0	229,508	229,508	1,834,838	285,908	305,150	159,058
1987	2,595	0	0	0	310,683	310,683	2,118,974	163,714	400,547	283,073
1988	2,600	0	0	0	330,235	330,235	2,069,192	186,333	300,016	370,271
1989	2,672	473,648	178,167	237,634	373,493	1,262,942	2,165,809	163,577	320,915	497,431
1990	2,687	555,022	244,894	122,245	425,808	1,347,969	2,225,336	251,433	355,020	571,031
1991	2,730	651,192	302,270	205,487	428,384	1,587,333	1,806,264	152,458	95,677	93,891
1992	2,774	443,937	189,347	265,499	280,507	1,179,290	2,065,169	405,995	409,499	363,989
1993	2,529	435,655	294,412	213,576	289,730	1,233,373	3,929,048	621,723	480,830	399,588
1994	3,058	429,380	198,315	206,191	365,007	1,198,893	4,667,358	302,111	404,698	407,723
1995	3,210	429,933	282,883	152,647	297,011	1,162,474	3,853,986	316,899	566,428	330,930
1996	3,370	791,757	272,443	237,405	255,880	1,557,485	3,493,840	253,450	663,703	491,819
1997	3,437	507,862	212,936	213,746	312,476	1,247,020	3,025,486	190,937	592,034	237,467
1998	3,506	452,400	227,331	215,484	269,547	1,164,762	3,040,817	340,118	577,835	283,437
1999	3,610	1,070,894	241,289	418,284	367,682	2,098,149	3,733,051	412,206	648,251	561,963
2000	3,794	1,097,107	247,952	437,042	376,434	2,158,535	4,161,213	446,133	716,149	623,016
2001	3,908	918,749	255,620	459,253	387,064	2,020,686	4,338,584	474,094	765,514	669,470
2002	3,908	952,344	266,024	475,643	400,452	2,094,463	4,212,340	492,973	795,522	702,725
2003	3,908	953,184	266,028	476,081	400,678	2,095,971	4,213,061	493,041	795,709	703,676
2004	3,908	929,864	259,072	464,581	391,500	2,045,017	4,111,087	480,177	775,015	670,105
2005	3,908	929,414	259,070	464,346	391,380	2,044,210	4,110,699	480,141	774,914	669,590
2006	3,908	928,438	259,065	463,835	391,117	2,042,455	4,109,860	480,063	774,693	668,470
2007	3,908	928,650	259,066	463,945	391,173	2,042,834	4,110,042	480,079	774,740	668,712
2008	3,908	928,787	259,067	464,017	391,210	2,043,081	4,110,159	480,090	774,771	668,870
2009	3,908	928,933	259,068	464,093	391,249	2,043,343	4,110,284	480,102	774,804	669,037
2010	3,908	928,555	259,066	463,895	391,148	2,042,664	4,109,959	480,071	774,719	668,603
2011	3,908	932,475	260,043	465,848	392,619	2,050,985	4,124,907	481,925	777,760	674,067
2012	3,908	932,589	260,043	465,908	392,651	2,051,191	4,125,006	481,934	777,787	674,200
2013	3,908	933,364	260,047	466,313	392,861	2,052,585	4,125,671	481,996	777,961	675,087
2014	3,908	934,569	260,054	466,943	393,185	2,054,751	4,126,707	482,094	778,234	676,467
2015	3,908	934,532	260,054	466,924	393,175	2,054,685	4,126,675	482,091	778,225	676,426
2016	3,908	934,239	260,052	466,770	393,096	2,054,157	4,126,422	482,067	778,159	676,089
2017	3,908	934,430	260,054	466,870	393,148	2,054,502	4,126,587	482,083	778,202	676,307
2018	3,908	935,340	260,058	467,346	393,395	2,056,139	4,127,369	482,156	778,408	677,349
2019	3,908	934,791	260,056	467,058	393,246	2,055,151	4,126,897	482,112	778,283	676,719
2020	3,908	934,572	260,055	466,944	393,187	2,054,758	4,126,709	482,094	778,234	676,470
2021	3,908	934,174	260,053	466,736	393,080	2,054,043	4,126,366	482,062	778,144	676,013
2022	3,908	935,245	260,059	467,296	393,369	2,055,969	4,127,286	482,148	778,386	677,239
2023	3,908	934,164	260,053	466,730	393,077	2,054,024	4,126,356	482,061	778,142	676,001
2024	3,908	934,702	260,056	467,012	393,222	2,054,992	4,126,820	482,105	778,263	676,616
2025	3,908	934,561	260,055	466,938	393,184	2,054,738	4,126,698	482,093	778,231	676,455
2026	3,908	934,780	260,056	467,052	393,244	2,055,132	4,126,887	482,110	778,280	676,706
2027	3,908	934,457	260,054	466,884	393,157	2,054,552	4,126,609	482,085	778,208	676,336
2028	3,908	934,999	260,057	467,168	393,304	2,055,528	4,127,075	482,128	778,330	676,959
2029	3,908	934,390	260,054	466,848	393,138	2,054,430	4,126,551	482,079	778,192	676,260
2030	3,908	934,103	260,053	466,698	393,061	2,053,915	4,126,305	482,056	778,128	675,932
2031	3,908	935,163	260,058	467,253	393,348	2,055,822	4,127,217	482,142	778,367	677,147
2032	3,908	935,061	260,057	467,200	393,320	2,055,638	4,127,129	482,133	778,344	677,030
2033	3,908	933,982	260,052	466,635	393,029	2,053,698	4,126,201	482,046	778,101	675,792
2034	3,908	934,661	260,056	466,990	393,210	2,054,917	4,126,784	482,101	778,253	676,571
2035	3,908	935,019	260,057	467,178	393,309	2,055,563	4,127,092	482,131	778,335	676,982
Total	205,598	40,026,067	11,994,731	19,256,471	20,167,809	91,445,078	204,567,544	23,032,351	37,266,124	30,866,640

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	South Bay Aqueduct (continued)					California Aqueduct			
						North San Joaquin Division			
	Reach 6 (11)	Reach 7 (12)	Reach 8 (13)	Reach 9 (14)	Total (15)	Reach 1 (16)	Reach 2A (17)	Reach 2B (18)	Subtotal (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	1,913,643	292,380	196,564	2,402,587
1978	(1,404)	16,766	(5,313)	104,078	1,137,686	1,860,459	306,556	188,229	2,355,244
1979	1,269	29,294	7,351	106,835	1,176,638	1,848,108	231,322	145,200	2,224,630
1980	3,621	24,270	17,404	110,852	1,850,866	2,365,296	472,725	247,627	3,085,648
1981	4,038	20,109	17,586	98,143	1,526,704	2,649,734	435,290	154,209	3,239,233
1982	2,236	22,870	21,919	202,590	1,893,348	3,192,718	599,640	244,620	4,036,978
1983	(2,047)	48,781	45,573	216,434	2,177,362	4,244,937	802,910	273,082	5,320,929
1984	4,449	44,017	23,563	455,131	3,021,169	4,361,129	807,022	288,992	5,457,143
1985	13,097	74,565	57,920	238,067	3,310,492	4,986,857	747,986	246,943	5,981,786
1986	11,614	31,084	46,864	363,352	3,037,868	5,217,771	930,065	359,375	6,507,211
1987	15,273	25,182	37,949	416,375	3,461,087	5,292,198	958,954	362,072	6,613,224
1988	30,217	41,057	49,171	335,502	3,381,759	5,330,933	821,911	360,280	6,513,124
1989	9,744	54,910	114,279	179,404	3,506,069	5,757,104	852,652	908,365	7,518,121
1990	31,160	69,412	119,305	247,772	3,870,469	6,775,666	1,066,418	883,844	8,725,928
1991	22,425	(18,729)	99,537	261,989	2,513,512	6,794,357	1,066,808	584,847	8,446,012
1992	26,793	332,064	98,676	186,643	3,888,828	9,415,954	1,419,837	673,903	11,509,694
1993	24,844	181,583	94,156	316,018	6,047,790	10,280,202	1,371,471	901,087	12,552,760
1994	28,382	90,781	80,952	416,040	6,398,045	8,439,834	1,325,817	802,283	10,567,934
1995	29,296	63,994	80,256	373,614	5,615,403	10,141,342	2,386,937	959,768	13,488,047
1996	(1,048)	60,540	11,229	311,015	5,284,548	10,157,015	2,603,243	625,647	13,385,905
1997	17,951	93,088	15,911	332,275	4,505,149	10,337,191	1,107,856	2,029,981	13,475,028
1998	26,386	72,074	541,577	546,001	5,428,245	11,624,077	1,422,698	5,267,366	18,314,141
1999	78,547	71,878	1,572,821	412,363	7,491,080	12,079,044	1,988,441	905,564	14,973,049
2000	84,108	77,712	94,993	464,228	6,667,552	12,136,500	2,611,503	1,014,704	15,762,707
2001	89,886	83,277	101,298	497,049	7,019,172	11,719,810	2,752,409	1,013,965	15,486,184
2002	93,519	86,680	105,345	516,945	7,006,049	11,897,964	2,271,977	755,137	14,925,078
2003	93,519	86,680	105,345	516,945	7,007,976	11,901,608	2,273,860	755,712	14,931,180
2004	91,084	84,403	102,594	503,442	6,817,907	11,635,580	2,218,537	739,394	14,593,511
2005	91,084	84,403	102,594	503,442	6,816,867	11,633,625	2,217,532	739,086	14,590,243
2006	91,084	84,403	102,594	503,442	6,814,609	11,629,383	2,215,355	738,420	14,583,158
2007	91,084	84,403	102,594	503,442	6,815,096	11,630,302	2,215,821	738,564	14,584,687
2008	91,084	84,403	102,594	503,442	6,815,413	11,630,898	2,216,130	738,657	14,585,685
2009	91,084	84,403	102,594	503,442	6,815,750	11,631,529	2,216,454	738,757	14,586,740
2010	91,084	84,403	102,594	503,442	6,814,875	11,629,887	2,215,609	738,498	14,583,994
2011	91,425	84,722	102,980	505,332	6,843,118	11,670,875	2,224,779	741,217	14,636,871
2012	91,425	84,722	102,980	505,332	6,843,386	11,671,371	2,225,035	741,296	14,637,702
2013	91,425	84,722	102,980	505,332	6,845,174	11,674,737	2,226,764	741,824	14,643,325
2014	91,425	84,722	102,980	505,332	6,847,961	11,679,969	2,229,455	742,647	14,652,071
2015	91,425	84,722	102,980	505,332	6,847,876	11,679,810	2,229,377	742,623	14,651,810
2016	91,425	84,722	102,980	505,332	6,847,196	11,678,533	2,228,716	742,420	14,649,669
2017	91,425	84,722	102,980	505,332	6,847,638	11,679,362	2,229,144	742,551	14,651,057
2018	91,425	84,722	102,980	505,332	6,849,741	11,683,312	2,231,175	743,173	14,657,660
2019	91,425	84,722	102,980	505,332	6,848,470	11,680,927	2,229,948	742,797	14,653,672
2020	91,425	84,722	102,980	505,332	6,847,966	11,679,976	2,229,461	742,647	14,652,084
2021	91,425	84,722	102,980	505,332	6,847,044	11,678,246	2,228,566	742,375	14,649,187
2022	91,425	84,722	102,980	505,332	6,849,518	11,682,893	2,230,959	743,107	14,656,959
2023	91,425	84,722	102,980	505,332	6,847,019	11,678,199	2,228,545	742,368	14,649,112
2024	91,425	84,722	102,980	505,332	6,848,263	11,680,538	2,229,748	742,736	14,653,022
2025	91,425	84,722	102,980	505,332	6,847,936	11,679,923	2,229,430	742,639	14,651,992
2026	91,425	84,722	102,980	505,332	6,848,442	11,680,879	2,229,920	742,789	14,653,588
2027	91,425	84,722	102,980	505,332	6,847,697	11,679,474	2,229,204	742,570	14,651,248
2028	91,425	84,722	102,980	505,332	6,848,951	11,681,832	2,230,414	742,940	14,655,186
2029	91,425	84,722	102,980	505,332	6,847,541	11,679,183	2,229,047	742,522	14,650,752
2030	91,425	84,722	102,980	505,332	6,846,880	11,677,940	2,228,410	742,328	14,648,678
2031	91,425	84,722	102,980	505,332	6,849,332	11,682,544	2,230,781	743,052	14,656,377
2032	91,425	84,722	102,980	505,332	6,849,095	11,682,102	2,230,552	742,982	14,655,636
2033	91,425	84,722	102,980	505,332	6,846,599	11,677,411	2,228,135	742,244	14,647,790
2034	91,425	84,722	102,980	505,332	6,848,168	11,680,359	2,229,654	742,708	14,652,721
2035	91,425	84,722	102,980	505,332	6,848,999	11,681,918	2,230,457	742,952	14,655,327
Total	3,729,642	4,586,404	6,977,903	24,938,486	335,965,094	576,619,995	107,618,933	46,422,753	730,661,681

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	San Luis Division						South San Joaquin Division		
	Reach 3 (20)	Reach 4 (21)	Reach 5 (22)	Reach 6 (23)	Reach 7 (24)	Subtotal (25)	Reach 8C (26)	Reach 8D (27)	Reach 9 (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	460,909	184,470	35,697	235,324	1,006,433	22,013	134,763	86,106
1970	89,547	484,296	225,994	66,067	192,578	1,058,482	26,207	156,984	128,276
1971	99,917	541,567	175,582	64,189	158,165	1,039,420	32,312	190,748	118,367
1972	116,708	647,979	174,519	73,670	154,783	1,167,659	35,031	187,230	130,384
1973	116,791	611,712	158,156	58,348	153,960	1,098,967	51,150	225,722	127,505
1974	120,309	671,468	150,855	63,912	150,240	1,156,784	34,752	199,098	131,270
1975	133,593	839,295	178,990	81,484	157,594	1,390,956	78,523	250,349	158,979
1976	54,938	883,968	220,850	90,312	174,844	1,424,912	39,348	133,907	123,398
1977	73,331	1,114,493	270,778	98,148	196,332	1,753,082	38,086	121,328	178,060
1978	45,618	898,999	203,272	106,942	203,084	1,457,915	45,551	178,771	129,895
1979	224,235	842,403	143,890	99,611	180,654	1,490,793	69,973	150,694	129,770
1980	243,622	1,176,342	222,752	127,557	281,771	2,052,044	57,726	274,877	185,182
1981	266,217	1,065,199	192,791	90,442	1,612,033	3,226,682	80,123	198,320	144,251
1982	279,552	1,241,210	209,254	114,379	1,433,123	3,277,518	59,426	269,182	233,586
1983	214,241	1,949,079	339,906	131,412	2,143,725	4,778,363	49,448	383,494	223,097
1984	235,637	2,095,833	344,484	167,179	2,115,883	4,959,016	41,952	464,136	309,074
1985	322,431	2,884,803	361,851	177,028	1,605,488	5,351,601	63,815	539,394	247,526
1986	416,468	2,996,573	472,200	252,064	601,081	4,738,386	90,732	478,920	596,929
1987	363,100	3,104,356	423,738	236,218	439,054	4,566,466	113,966	412,259	446,275
1988	364,045	2,955,514	458,152	232,241	640,006	4,649,958	96,748	378,544	417,494
1989	263,372	3,183,567	393,544	333,085	633,672	4,807,240	83,331	390,198	401,335
1990	398,492	3,996,311	580,677	465,115	731,091	6,171,686	111,175	438,407	516,879
1991	256,056	4,387,675	543,796	728,082	765,597	6,681,206	104,396	496,873	466,019
1992	301,316	3,792,917	795,992	363,283	815,822	6,069,330	118,331	512,198	418,090
1993	439,174	4,346,296	1,008,720	551,982	734,920	7,081,092	230,344	746,100	490,465
1994	283,505	4,367,021	816,326	396,845	492,935	6,356,632	125,402	602,504	572,668
1995	104,291	5,091,085	1,067,141	440,081	1,356,709	8,059,307	185,682	657,489	432,292
1996	1,005,434	4,668,014	929,823	682,468	1,033,475	8,319,214	111,925	415,791	471,934
1997	855,032	5,686,307	923,613	265,452	651,734	8,382,138	126,886	447,082	716,979
1998	695,577	5,456,949	1,122,470	508,351	668,093	8,451,440	129,485	472,152	563,153
1999	826,738	5,027,426	1,003,325	386,675	538,664	7,782,828	234,890	953,124	792,726
2000	1,095,212	5,471,748	1,165,643	417,291	571,050	8,720,944	252,168	961,206	789,472
2001	1,116,191	5,570,167	1,140,936	462,386	631,287	8,920,967	270,725	1,030,980	846,015
2002	889,536	4,762,373	1,025,698	482,965	659,557	7,820,129	281,590	1,070,068	877,613
2003	891,531	4,770,171	1,025,698	483,610	660,370	7,831,380	281,612	1,071,131	878,607
2004	831,374	4,596,095	981,881	463,385	632,714	7,505,449	274,260	1,043,651	856,146
2005	830,309	4,591,922	981,881	463,040	632,281	7,499,433	274,248	1,043,085	855,615
2006	828,000	4,582,852	981,881	462,294	631,339	7,486,366	274,223	1,041,853	854,462
2007	828,493	4,584,813	981,881	462,455	631,541	7,489,183	274,229	1,042,118	854,710
2008	828,822	4,586,090	981,881	462,559	631,675	7,491,027	274,232	1,042,292	854,874
2009	829,165	4,587,438	981,881	462,672	631,816	7,492,972	274,236	1,042,475	855,045
2010	828,270	4,583,927	981,881	462,381	631,450	7,487,909	274,226	1,041,998	854,598
2011	837,208	4,611,893	987,295	465,369	635,480	7,537,245	275,271	1,046,650	858,497
2012	837,482	4,612,955	987,295	465,457	635,592	7,538,781	275,274	1,046,795	858,632
2013	839,312	4,620,151	987,295	466,050	636,340	7,549,148	275,293	1,047,773	859,547
2014	842,166	4,631,337	987,295	466,971	637,504	7,565,273	275,324	1,049,293	860,970
2015	842,083	4,630,996	987,295	466,944	637,469	7,564,787	275,323	1,049,247	860,928
2016	841,381	4,628,264	987,295	466,718	637,184	7,560,842	275,315	1,048,875	860,578
2017	841,835	4,630,040	987,295	466,864	637,369	7,563,403	275,320	1,049,117	860,805
2018	843,989	4,638,488	987,295	467,560	638,248	7,575,580	275,343	1,050,264	861,880
2019	842,687	4,633,383	987,295	467,139	637,716	7,568,220	275,330	1,049,570	861,232
2020	842,171	4,631,352	987,295	466,973	637,506	7,565,297	275,324	1,049,296	860,972
2021	841,223	4,627,650	987,295	466,667	637,120	7,559,955	275,314	1,048,792	860,500
2022	843,758	4,637,589	987,295	467,487	638,154	7,574,283	275,340	1,050,142	861,765
2023	841,201	4,627,553	987,295	466,659	637,110	7,559,818	275,314	1,048,779	860,489
2024	842,476	4,632,553	987,295	467,072	637,630	7,567,026	275,327	1,049,458	861,126
2025	842,139	4,631,240	987,295	466,963	637,493	7,565,130	275,324	1,049,279	860,957
2026	842,659	4,633,278	987,295	467,131	637,706	7,568,069	275,329	1,049,556	861,217
2027	841,899	4,630,281	987,295	466,886	637,394	7,563,755	275,321	1,049,150	860,836
2028	843,181	4,635,319	987,295	467,300	637,918	7,571,013	275,335	1,049,834	861,478
2029	841,734	4,629,653	987,295	466,833	637,328	7,562,843	275,320	1,049,063	860,755
2030	841,056	4,626,994	987,295	466,613	637,052	7,559,010	275,312	1,048,703	860,417
2031	843,571	4,636,841	987,295	467,425	638,077	7,573,209	275,338	1,050,041	861,671
2032	843,328	4,635,895	987,295	467,347	637,979	7,571,844	275,336	1,049,912	861,550
2033	840,767	4,625,864	987,295	466,519	636,933	7,557,378	275,309	1,048,549	860,273
2034	842,378	4,632,169	987,295	467,039	637,590	7,566,471	275,326	1,049,406	861,076
2035	843,226	4,635,502	987,295	467,314	637,937	7,571,274	275,335	1,049,859	861,500
Total	40,261,171	246,332,710	50,341,533	24,289,248	44,235,376	405,460,038	12,577,475	49,118,898	40,984,772

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	South San Joaquin Division (continued)								
	Reach 10A (29)	Reach 11B (30)	Reach 12D (31)	Reach 12E (32)	Reach 13B (33)	Reach 14A (34)	Reach 14B (35)	Reach 14C (36)	Reach 15A (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	83,709	59,079	0	0	0	0	0	0	0
1970	118,049	85,760	94,176	123,376	152,426	0	0	0	0
1971	129,805	80,279	95,070	91,385	167,137	691,804	151,989	111,629	529,723
1972	117,612	84,280	98,636	115,584	146,084	877,545	124,840	101,485	609,057
1973	117,678	92,241	74,215	114,827	221,359	961,876	120,125	99,442	692,708
1974	141,627	98,085	74,889	193,506	141,511	898,284	143,877	115,657	853,076
1975	207,878	124,087	61,774	117,176	108,125	1,156,767	180,623	119,896	988,023
1976	139,107	69,699	33,632	147,892	134,037	1,124,069	177,102	114,145	1,037,787
1977	194,065	108,631	91,529	175,026	137,954	1,397,021	203,851	119,477	1,339,199
1978	168,597	106,680	72,554	170,556	151,085	1,254,007	139,628	132,199	1,265,831
1979	175,125	85,952	56,346	174,158	150,046	1,490,434	201,912	260,966	1,216,127
1980	284,236	120,913	123,145	167,266	164,775	1,988,621	189,133	238,607	1,437,488
1981	199,992	77,005	33,378	113,242	171,734	1,741,404	163,858	161,128	1,799,880
1982	265,047	158,238	142,719	224,234	224,145	1,793,762	194,991	15,703	1,934,046
1983	308,824	136,364	124,741	203,747	217,349	2,421,775	199,690	181,865	2,550,989
1984	405,530	169,426	116,159	165,686	253,087	3,310,657	328,217	199,398	3,229,261
1985	337,875	243,720	197,966	232,235	360,546	3,463,131	237,063	180,023	3,426,955
1986	422,631	248,252	242,781	346,493	349,503	3,781,411	320,972	360,147	3,574,398
1987	488,455	334,194	325,896	469,517	323,044	3,726,753	464,902	242,465	4,080,769
1988	531,972	290,568	220,124	374,349	317,667	3,453,114	411,585	314,158	3,746,916
1989	733,650	268,357	207,852	595,978	381,352	3,514,413	334,066	221,014	3,752,959
1990	652,903	363,812	225,416	480,909	678,004	4,009,779	439,784	212,722	4,368,419
1991	716,388	328,714	269,976	371,317	433,361	4,308,284	424,589	273,096	4,566,170
1992	574,303	334,756	270,897	409,534	423,930	4,734,763	729,249	571,450	4,271,111
1993	723,580	413,911	278,501	497,097	594,406	5,188,395	663,923	423,678	5,272,678
1994	703,608	346,654	239,966	482,365	446,007	4,005,211	414,545	254,124	3,720,030
1995	882,140	405,153	242,444	622,787	507,302	4,627,740	309,095	315,761	4,013,647
1996	983,596	367,252	238,493	519,169	604,154	4,840,394	214,059	187,204	4,274,653
1997	1,846,464	309,232	251,127	512,129	434,751	5,063,055	257,836	269,631	4,008,594
1998	1,127,374	310,131	206,249	462,841	470,204	5,012,525	323,479	285,747	4,509,014
1999	1,342,977	622,062	507,540	804,568	830,163	5,459,474	701,603	484,203	5,192,222
2000	1,367,371	649,965	546,240	849,706	889,613	6,072,980	1,139,001	519,107	5,507,397
2001	857,906	643,554	585,419	909,044	955,971	6,295,278	1,215,265	557,655	5,712,575
2002	892,274	667,965	606,761	944,120	992,387	6,116,920	837,568	578,598	5,827,026
2003	892,274	668,553	607,715	944,734	993,256	6,120,737	838,577	579,338	5,829,247
2004	868,987	651,386	592,299	920,369	967,720	5,983,026	817,162	564,546	5,697,760
2005	868,987	651,073	591,790	920,041	967,256	5,980,984	816,622	564,152	5,696,574
2006	868,987	650,391	590,685	919,329	966,248	5,976,544	815,449	563,292	5,693,988
2007	868,987	650,536	590,923	919,482	966,466	5,977,503	815,702	563,478	5,694,548
2008	868,987	650,633	591,080	919,584	966,608	5,978,129	815,868	563,598	5,694,913
2009	868,987	650,735	591,243	919,690	966,758	5,978,790	816,043	563,727	5,695,295
2010	868,987	650,472	590,817	919,413	966,367	5,977,071	815,588	563,396	5,694,295
2011	872,248	653,321	593,694	923,290	970,602	5,999,824	819,353	566,025	5,714,985
2012	872,248	653,403	593,825	923,375	970,720	6,000,346	819,491	566,125	5,715,286
2013	872,248	653,944	594,701	923,940	971,520	6,003,867	820,422	566,808	5,717,339
2014	872,248	654,785	596,066	924,819	972,766	6,009,341	821,870	567,868	5,720,523
2015	872,248	654,760	596,024	924,793	972,727	6,009,175	821,827	567,835	5,720,427
2016	872,248	654,554	595,691	924,576	972,423	6,007,837	821,471	567,576	5,719,649
2017	872,248	654,688	595,908	924,717	972,621	6,008,708	821,703	567,743	5,720,155
2018	872,248	655,324	596,936	925,381	973,561	6,012,840	822,797	568,543	5,722,559
2019	872,248	654,939	596,313	924,980	972,992	6,010,343	822,136	568,061	5,721,108
2020	872,248	654,787	596,068	924,820	972,768	6,009,349	821,874	567,869	5,720,528
2021	872,248	654,507	595,615	924,529	972,354	6,007,537	821,394	567,518	5,719,475
2022	872,248	655,256	596,828	925,311	973,461	6,012,401	822,679	568,460	5,722,307
2023	872,248	654,501	595,605	924,521	972,344	6,007,489	821,382	567,508	5,719,447
2024	872,248	654,877	596,214	924,915	972,901	6,009,937	822,029	567,982	5,720,870
2025	872,248	654,778	596,053	924,810	972,754	6,009,294	821,858	567,858	5,720,498
2026	872,248	654,932	596,301	924,971	972,981	6,010,291	822,123	568,050	5,721,077
2027	872,248	654,707	595,938	924,736	972,648	6,008,825	821,733	567,767	5,720,223
2028	872,248	655,086	596,550	925,131	973,208	6,011,290	822,386	568,244	5,721,658
2029	872,248	654,658	595,859	924,686	972,577	6,008,517	821,651	567,707	5,720,046
2030	872,248	654,458	595,535	924,477	972,282	6,007,215	821,308	567,455	5,719,288
2031	872,248	655,199	596,737	925,252	973,378	6,012,036	822,583	568,388	5,722,092
2032	872,248	655,129	596,621	925,177	973,272	6,011,573	822,461	568,299	5,721,822
2033	872,248	654,373	595,398	924,388	972,156	6,006,663	821,161	567,349	5,718,965
2034	872,248	654,848	596,167	924,884	972,858	6,009,750	821,979	567,947	5,720,761
2035	872,248	655,099	596,572	925,146	973,228	6,011,379	822,409	568,260	5,721,711
Total	47,023,731	30,395,663	26,600,382	42,682,086	44,609,000	302,970,257	39,051,511	26,941,152	288,008,147

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	South San Joaquin Division (continued)		Tehachapi Division			Mojave Division			
Calendar Year	Reach 16A (38)	Subtotal (39)	Reach 17E (40)	Reach 17F (41)	Subtotal (42)	Reach 18A (43)	Reach 19 (44)	Reach 19C (45)	Reach 20A (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	385,670	0	0	0	0	0	0	0
1970	0	885,254	0	0	0	0	0	0	0
1971	10,291	2,400,539	3,471	0	3,471	0	0	0	0
1972	1,106,874	3,734,642	1,424,782	28,127	1,452,909	36,700	135,680	0	130,714
1973	1,243,935	4,142,783	1,777,260	49,949	1,827,209	36,207	146,734	0	161,834
1974	1,343,970	4,369,602	2,298,091	16,259	2,314,350	30,524	90,398	0	115,566
1975	1,537,883	5,090,083	2,403,430	35,193	2,438,623	40,587	122,578	0	137,680
1976	1,727,430	5,001,553	2,776,194	126,653	2,902,847	118,609	201,213	0	182,926
1977	1,961,069	6,065,296	3,845,464	83,936	3,929,400	93,566	226,909	0	180,886
1978	1,923,120	5,738,474	2,954,313	42,644	2,996,957	91,841	200,874	0	215,757
1979	1,798,771	5,960,274	3,539,402	46,014	3,585,416	99,751	307,731	0	261,484
1980	2,231,699	7,463,668	4,749,245	54,823	4,804,068	116,560	446,482	0	290,954
1981	2,763,228	7,647,543	5,485,957	64,919	5,550,876	316,734	585,598	0	325,563
1982	2,961,171	8,476,250	6,349,080	56,009	6,405,089	447,799	638,873	0	275,962
1983	4,301,846	11,303,229	14,153,033	96,407	14,249,440	345,278	564,912	0	368,301
1984	5,068,206	14,060,789	18,448,383	77,357	18,525,740	268,193	563,007	0	415,713
1985	5,684,095	15,214,344	18,134,698	137,919	18,272,617	298,878	474,784	0	450,256
1986	5,780,973	16,594,142	19,297,129	109,910	19,407,039	703,270	350,291	0	347,237
1987	5,636,300	17,064,795	17,398,908	98,321	17,497,229	1,260,897	558,400	0	817,989
1988	5,151,298	15,704,537	17,700,168	138,455	17,838,623	1,242,496	560,927	0	585,065
1989	5,461,551	16,346,056	17,644,967	88,447	17,733,414	1,050,027	282,244	0	366,036
1990	6,413,936	18,912,145	19,786,322	99,758	19,886,080	1,298,252	227,998	0	468,680
1991	5,804,243	18,563,426	19,901,003	131,379	20,032,382	1,432,097	665,453	0	1,024,907
1992	6,473,441	19,842,053	18,195,357	279,546	18,474,903	1,167,738	738,331	0	666,279
1993	7,598,171	23,121,249	19,164,021	199,434	19,363,455	1,868,172	606,753	0	1,232,353
1994	7,127,451	19,040,535	17,229,520	204,883	17,434,403	1,699,015	764,540	0	1,146,521
1995	6,622,742	19,824,274	19,731,797	191,262	19,923,059	1,283,274	614,596	0	1,942,137
1996	6,950,144	20,178,768	18,105,156	238,417	18,343,573	1,147,572	576,056	0	1,331,603
1997	7,350,944	21,594,710	19,637,239	178,588	19,815,827	1,332,590	733,432	0	1,402,617
1998	7,612,076	21,484,430	22,526,382	190,003	22,716,385	1,448,421	357,516	0	7,209,742
1999	8,290,219	26,215,771	23,385,892	234,532	23,620,424	3,410,922	1,080,706	0	3,893,263
2000	8,622,163	28,166,389	25,437,222	814,264	26,251,486	1,995,249	1,061,108	0	1,852,521
2001	8,368,726	28,249,113	24,934,924	874,141	25,809,065	1,945,087	1,054,211	0	1,667,116
2002	8,396,423	28,089,313	23,662,765	351,371	24,014,136	2,019,517	1,078,093	0	1,623,641
2003	8,401,906	28,107,687	23,669,226	351,605	24,020,831	2,021,295	1,086,740	0	1,629,196
2004	8,229,505	27,466,817	23,326,713	342,529	23,669,242	1,969,658	1,062,559	0	1,589,453
2005	8,226,600	27,457,027	23,323,254	342,407	23,665,661	1,968,725	1,058,204	0	1,586,652
2006	8,220,228	27,435,679	23,315,733	342,137	23,657,870	1,966,678	1,048,513	0	1,580,430
2007	8,221,616	27,440,298	23,317,361	342,196	23,659,557	1,967,123	1,050,655	0	1,581,802
2008	8,222,513	27,443,311	23,318,419	342,235	23,660,654	1,967,408	1,052,005	0	1,582,670
2009	8,223,466	27,446,490	23,319,536	342,277	23,661,813	1,967,714	1,053,482	0	1,583,618
2010	8,221,007	27,438,235	23,316,625	342,171	23,658,796	1,966,930	1,049,810	0	1,581,260
2011	8,250,607	27,544,367	23,373,884	343,619	23,717,503	1,975,586	1,059,445	0	1,590,839
2012	8,251,356	27,546,876	23,374,764	343,649	23,718,413	1,975,829	1,060,652	0	1,591,614
2013	8,256,409	27,563,811	23,380,730	343,865	23,724,595	1,977,454	1,068,368	0	1,596,572
2014	8,264,258	27,590,131	23,390,001	344,199	23,734,200	1,979,968	1,080,188	0	1,604,167
2015	8,264,021	27,589,335	23,389,718	344,188	23,733,906	1,979,895	1,079,905	0	1,603,985
2016	8,262,111	27,582,904	23,387,456	344,108	23,731,564	1,979,284	1,077,117	0	1,602,194
2017	8,263,361	27,587,094	23,388,928	344,161	23,733,089	1,979,690	1,079,049	0	1,603,434
2018	8,269,287	27,606,963	23,395,930	344,411	23,740,341	1,981,589	1,087,988	0	1,609,177
2019	8,265,713	27,594,965	23,391,699	344,262	23,735,961	1,980,448	1,082,718	0	1,605,791
2020	8,264,287	27,590,190	23,390,013	344,201	23,734,214	1,979,987	1,080,495	0	1,604,360
2021	8,261,688	27,581,471	23,386,947	344,090	23,731,037	1,979,154	1,076,557	0	1,601,832
2022	8,268,667	27,604,865	23,395,185	344,388	23,739,573	1,981,401	1,087,280	0	1,608,722
2023	8,261,625	27,581,252	23,386,865	344,087	23,730,952	1,979,135	1,076,533	0	1,601,819
2024	8,265,136	27,593,020	23,391,010	344,238	23,735,248	1,980,265	1,081,887	0	1,605,255
2025	8,264,205	27,589,916	23,389,922	344,199	23,734,121	1,979,963	1,080,376	0	1,604,287
2026	8,265,647	27,594,723	23,391,611	344,260	23,735,871	1,980,431	1,082,740	0	1,605,804
2027	8,263,524	27,587,656	23,389,126	344,169	23,733,295	1,979,746	1,079,338	0	1,603,619
2028	8,267,084	27,599,532	23,393,303	344,321	23,737,624	1,980,885	1,084,819	0	1,607,141
2029	8,263,093	27,586,180	23,388,607	344,151	23,732,758	1,979,611	1,078,787	0	1,603,267
2030	8,261,233	27,579,931	23,386,402	344,071	23,730,473	1,979,014	1,075,983	0	1,601,463
2031	8,268,131	27,603,094	23,394,564	344,365	23,738,929	1,981,225	1,086,380	0	1,608,144
2032	8,267,487	27,600,887	23,393,780	344,339	23,738,119	1,981,017	1,085,419	0	1,607,526
2033	8,260,435	27,577,267	23,385,466	344,036	23,729,502	1,978,758	1,074,775	0	1,600,687
2034	8,264,861	27,592,111	23,390,692	344,226	23,734,918	1,980,175	1,081,425	0	1,604,960
2035	8,267,209	27,599,955	23,393,455	344,327	23,737,782	1,980,937	1,085,205	0	1,607,387
Total	425,872,665	1,376,835,739	1,203,708,500	16,690,407	1,220,398,907	93,932,801	51,451,825	0	83,890,430

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	Mojave Division (continued)							Santa Ana Division	
	Reach 20B (47)	Reach 21 (48)	Reach 22A (49)	Reach 22B (50)	Reach 23 (51)	Reach 24 (52)	Subtotal (53)	Reach 25 (54)	Reach 26A (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	120,273	75,769	80,438	1,036,824	51,520	362,178	2,030,096	26	578
1973	148,627	60,639	66,537	1,283,825	65,475	353,268	2,323,146	20,541	679,329
1974	88,195	65,005	77,665	1,477,953	96,340	334,280	2,375,926	24,380	799,400
1975	118,894	135,460	77,823	1,630,563	111,141	419,435	2,794,161	29,337	885,021
1976	151,554	106,313	131,006	1,598,077	107,787	304,610	2,902,095	51,356	1,103,139
1977	112,591	98,758	86,280	1,882,086	71,228	48,313	2,800,617	62,584	1,412,740
1978	120,669	109,321	71,799	2,212,822	72,179	638,948	3,734,210	67,186	1,159,951
1979	194,390	203,245	121,716	2,105,987	76,960	200,816	3,572,080	84,462	1,235,703
1980	237,489	156,933	117,378	2,671,358	147,009	688,416	4,872,579	72,651	1,532,341
1981	292,545	181,330	119,807	3,032,018	134,895	44,104	5,032,594	35,662	1,575,407
1982	330,703	186,226	125,513	3,250,222	299,712	623,900	6,178,910	26,852	1,822,258
1983	326,932	220,036	140,595	3,901,134	223,626	378,650	6,469,464	19,017	1,663,602
1984	332,427	268,398	147,951	4,797,771	59,337	1,125,824	7,978,621	11,319	2,325,702
1985	388,128	799,397	125,711	5,333,719	261,135	811,102	8,943,110	17,764	2,707,667
1986	315,085	241,876	178,638	6,196,835	156,053	514,439	9,003,724	31,012	2,768,702
1987	357,492	297,890	236,036	5,734,967	151,796	731,826	10,147,293	19,362	2,847,155
1988	399,997	331,137	149,870	6,915,427	253,901	969,798	11,408,618	36,587	3,088,657
1989	345,061	193,704	138,583	5,966,751	349,716	1,242,997	9,935,119	30,868	3,192,435
1990	201,576	273,253	48,784	6,891,606	436,781	1,892,870	11,739,800	25,489	3,330,887
1991	516,199	478,525	231,243	7,489,882	262,701	1,562,026	13,663,033	32,081	3,845,373
1992	696,737	585,131	168,266	7,083,762	317,026	615,540	12,038,810	55,764	4,044,255
1993	818,519	509,271	207,810	7,778,980	359,619	1,703,533	15,085,010	72,356	5,661,527
1994	958,214	873,702	242,032	8,722,207	1,220,785	1,259,110	16,886,126	105,304	6,827,762
1995	2,411,584	355,301	180,013	7,583,079	854,450	738,684	15,963,118	96,639	5,835,584
1996	1,712,206	790,108	136,161	9,631,237	808,389	(90,114)	16,043,218	156,190	5,178,932
1997	2,038,581	650,200	190,291	9,264,774	2,263,128	3,367,427	21,243,040	198,757	6,073,449
1998	791,897	346,542	108,005	10,358,824	2,695,072	1,159,217	24,475,236	218,053	6,536,785
1999	1,067,692	727,506	378,724	10,459,066	535,884	1,989,776	23,543,539	87,542	7,164,249
2000	1,060,107	720,504	429,246	9,638,937	678,276	1,980,128	19,416,076	77,147	6,644,275
2001	925,952	694,357	432,959	8,826,444	699,477	1,931,921	18,177,524	67,697	6,129,516
2002	951,531	715,458	394,301	8,510,469	455,188	2,080,102	17,828,300	70,330	6,232,500
2003	957,086	718,597	396,764	8,533,512	456,643	567,179	16,367,012	70,330	6,234,439
2004	934,408	701,286	387,384	8,363,701	453,962	1,235,985	16,698,396	68,492	6,103,966
2005	931,607	699,704	386,145	8,351,895	453,183	3,607,379	19,043,494	68,492	6,102,928
2006	925,385	696,185	383,382	8,325,805	451,491	938,968	16,316,837	68,492	6,100,671
2007	926,757	696,960	383,994	8,331,531	451,858	2,201,834	17,592,514	68,492	6,101,160
2008	927,625	697,453	384,378	8,335,176	452,095	1,619,761	17,018,571	68,492	6,101,477
2009	928,573	697,988	384,799	8,339,127	452,347	2,176,700	17,584,348	68,492	6,101,812
2010	926,215	696,655	383,752	8,329,184	451,692	1,779,632	17,165,130	68,492	6,100,939
2011	933,407	701,352	386,847	8,370,833	453,290	2,241,840	17,713,439	68,749	6,122,243
2012	934,182	701,787	387,191	8,374,024	453,488	1,914,280	17,393,047	68,749	6,122,508
2013	939,140	704,587	389,386	8,394,776	454,831	1,008,890	16,534,004	68,749	6,124,298
2014	946,735	708,881	392,757	8,426,703	456,917	2,641,413	18,237,729	68,749	6,127,080
2015	946,553	708,781	392,676	8,425,877	456,854	1,003,035	16,597,561	68,749	6,126,994
2016	944,762	707,767	391,882	8,418,273	456,344	2,880,113	18,457,736	68,749	6,126,315
2017	946,002	708,469	392,433	8,423,448	456,676	1,681,422	17,270,623	68,749	6,126,757
2018	951,745	711,715	394,979	8,447,581	458,251	1,981,394	17,624,419	68,749	6,128,858
2019	948,359	709,800	393,478	8,433,254	457,300	2,865,980	18,477,128	68,749	6,127,588
2020	946,928	708,991	392,843	8,427,307	456,920	1,751,141	17,348,972	68,749	6,127,083
2021	944,400	707,563	391,723	8,416,692	456,230	777,524	16,351,675	68,749	6,126,163
2022	951,290	711,458	394,776	8,445,490	458,085	1,831,271	17,469,773	68,749	6,128,635
2023	944,387	707,555	391,717	8,416,569	456,212	2,829,045	18,402,972	68,749	6,126,138
2024	947,823	709,498	393,240	8,430,969	457,145	1,676,032	17,282,114	68,749	6,127,382
2025	946,855	708,948	392,810	8,426,990	456,900	1,861,981	17,459,110	68,749	6,127,056
2026	948,372	709,808	393,486	8,433,212	457,280	2,935,079	18,546,212	68,749	6,127,562
2027	946,187	708,575	392,516	8,424,201	456,720	1,506,409	17,097,311	68,749	6,126,817
2028	949,709	710,562	394,077	8,438,888	457,660	812,436	16,436,177	68,749	6,128,070
2029	945,835	708,373	392,357	8,422,634	456,603	2,766,648	18,354,115	68,749	6,126,661
2030	944,031	707,355	391,558	8,415,049	456,107	2,880,018	18,450,578	68,749	6,125,999
2031	950,712	711,129	394,522	8,443,142	457,944	226,149	15,859,347	68,749	6,128,449
2032	950,094	710,782	394,246	8,440,513	457,768	2,748,222	18,375,587	68,749	6,128,214
2033	943,255	706,916	391,213	8,411,800	455,897	1,443,232	17,006,533	68,749	6,125,718
2034	947,528	709,333	393,110	8,429,768	457,073	1,237,878	16,841,250	68,749	6,127,286
2035	949,955	710,704	394,186	8,439,780	457,695	4,243,459	19,869,308	68,749	6,128,116
Total	49,637,749	34,766,812	18,241,788	450,755,310	29,316,047	93,855,453	905,848,215	4,172,814	306,420,263

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	Santa Ana Division (continued)				West Branch				
	Reach 28G (56)	Reach 28H (57)	Reach 28J (58)	Subtotal (59)	Reach 29A (60)	Reach 29F (61)	Reach 29G (62)	Reach 29H (63)	Reach 29J (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	719,256	159,247	199,146	234,212	88,198
1973	136,352	79	0	836,301	779,950	339,367	122,665	264,882	119,743
1974	155,262	34,693	854,650	1,868,385	883,312	158,371	112,459	350,184	(4,525)
1975	110,729	69,082	723,795	1,817,964	1,049,989	176,679	194,726	801,562	75,870
1976	138,575	100,400	635,836	2,029,306	1,220,429	215,605	202,592	624,678	98,268
1977	127,543	92,647	825,892	2,521,406	1,268,814	116,934	218,129	684,727	184
1978	166,919	68,363	836,568	2,298,987	1,174,723	342,709	267,310	415,710	17,764
1979	142,586	92,812	262,278	1,817,841	1,366,993	285,837	284,195	975,299	29,850
1980	158,340	129,897	1,055,573	2,948,802	1,698,263	224,449	455,621	874,444	288,303
1981	160,053	111,722	331,344	2,214,188	1,783,476	123,179	615,044	2,313,050	8,794
1982	205,350	135,463	1,526,241	3,716,164	1,920,015	190,487	702,264	2,217,880	414,230
1983	244,720	124,651	414,752	2,466,742	2,739,844	149,590	888,475	753,116	579,882
1984	240,496	190,924	783,486	3,551,927	3,464,746	79,001	2,358,495	590,039	719,282
1985	451,600	182,242	869,950	4,229,223	3,866,822	295,984	3,047,591	981,114	614,735
1986	439,048	256,526	985,538	4,480,826	3,791,344	457,798	2,893,171	1,484,377	1,032,216
1987	278,094	218,717	1,118,126	4,481,454	3,423,387	212,828	2,933,342	947,172	459,398
1988	271,950	200,872	1,178,596	4,776,662	3,448,204	255,110	3,018,363	884,481	446,525
1989	231,053	282,008	1,132,074	4,868,438	4,027,378	406,048	2,739,490	1,402,516	865,701
1990	437,789	308,121	1,540,250	5,642,536	4,066,434	383,726	3,221,173	3,162,683	763,796
1991	843,199	632,801	1,636,784	6,990,238	3,861,473	303,919	3,549,318	638,897	762,813
1992	281,848	5,636,602	1,102,538	11,121,007	4,286,384	327,584	3,892,794	1,019,243	872,780
1993	382,114	570,485	996,965	7,683,447	3,981,127	343,345	4,522,227	1,667,420	861,163
1994	617,081	415,548	1,020,029	8,985,724	3,636,547	295,054	3,351,619	1,881,462	861,564
1995	1,308,715	704,042	897,010	8,841,990	4,172,960	884,172	4,758,952	1,587,439	698,682
1996	996,984	1,034,955	1,312,808	8,679,869	4,402,463	967,032	3,514,701	4,211,741	640,836
1997	504,778	949,272	947,433	8,673,689	4,543,676	1,043,814	2,489,844	3,804,120	1,751,021
1998	374,424	804,211	(370,489)	7,562,984	4,930,698	430,801	3,218,140	2,640,635	2,041,011
1999	868,764	1,667,830	2,180,602	11,968,987	5,839,092	1,500,649	3,197,269	3,488,216	1,343,980
2000	929,843	635,746	2,283,344	10,570,355	5,845,833	618,405	2,897,816	3,472,819	1,317,730
2001	899,475	616,446	2,085,021	9,798,155	6,154,008	665,698	2,978,897	3,676,048	815,487
2002	652,230	455,284	2,249,050	9,659,394	6,300,108	672,757	3,074,096	4,046,034	740,291
2003	652,230	455,284	2,123,677	9,535,960	6,301,900	681,765	3,076,793	3,762,189	740,291
2004	635,959	443,394	1,850,512	9,102,323	6,166,158	668,862	3,010,385	3,676,636	727,238
2005	635,959	443,394	2,394,290	9,645,063	6,165,212	664,216	3,008,947	3,660,970	727,238
2006	635,959	443,394	1,635,649	8,884,165	6,163,127	653,724	3,005,789	3,624,964	727,238
2007	635,959	443,394	2,173,296	9,422,301	6,163,580	656,059	3,006,474	3,632,824	727,238
2008	635,959	443,394	1,970,918	9,220,240	6,163,873	657,543	3,006,919	3,637,986	727,238
2009	635,959	443,394	2,024,857	9,274,514	6,164,183	659,123	3,007,391	3,643,544	727,238
2010	635,959	443,394	2,344,645	9,593,429	6,163,382	655,117	3,006,174	3,629,982	727,238
2011	638,239	445,059	1,930,021	9,204,311	6,184,148	663,782	3,017,958	3,665,575	729,064
2012	638,239	445,059	2,112,235	9,386,790	6,184,394	665,014	3,018,327	3,669,668	729,064
2013	638,239	445,059	2,377,473	9,653,818	6,186,044	673,309	3,020,827	3,698,094	729,064
2014	638,239	445,059	1,992,431	9,271,558	6,188,608	686,178	3,024,719	3,742,229	729,064
2015	638,239	445,059	2,243,483	9,522,524	6,188,531	685,792	3,024,599	3,740,859	729,064
2016	638,239	445,059	1,926,303	9,204,665	6,187,904	682,701	3,023,649	3,730,136	729,064
2017	638,239	445,059	2,536,379	9,815,183	6,188,316	684,755	3,024,266	3,737,158	729,064
2018	638,239	445,059	2,054,474	9,335,379	6,190,253	694,476	3,027,202	3,770,340	729,064
2019	638,239	445,059	2,559,554	9,839,189	6,189,085	688,659	3,025,428	3,750,209	729,064
2020	638,239	445,059	1,802,895	9,082,025	6,188,619	686,316	3,024,718	3,741,809	729,064
2021	638,239	445,059	2,115,401	9,393,611	6,187,770	682,049	3,023,432	3,727,275	729,064
2022	638,239	445,059	2,941,606	10,222,288	6,190,049	693,496	3,026,886	3,766,609	729,064
2023	638,239	445,059	2,059,551	9,337,736	6,187,747	681,963	3,023,399	3,727,170	729,064
2024	638,239	445,059	2,379,543	9,658,972	6,188,896	687,722	3,025,139	3,746,892	729,064
2025	638,239	445,059	1,729,407	9,008,510	6,188,593	686,167	3,024,675	3,741,155	729,064
2026	638,239	445,059	2,865,179	10,144,788	6,189,062	688,575	3,025,390	3,749,718	729,064
2027	638,239	445,059	1,457,936	8,736,800	6,188,370	685,001	3,024,347	3,737,057	729,064
2028	638,239	445,059	2,301,284	9,581,401	6,189,530	690,964	3,026,109	3,758,457	729,064
2029	638,239	445,059	2,169,821	9,448,529	6,188,227	684,344	3,024,122	3,734,766	729,064
2030	638,239	445,059	2,236,936	9,514,982	6,187,622	681,324	3,023,205	3,724,952	729,064
2031	638,239	445,059	2,976,819	10,257,315	6,189,871	692,560	3,026,628	3,763,167	729,064
2032	638,239	445,059	1,644,995	8,925,256	6,189,665	691,634	3,026,309	3,760,789	729,064
2033	638,239	445,059	2,413,568	9,691,333	6,187,358	679,989	3,022,804	3,719,950	729,064
2034	638,239	445,059	2,187,776	9,467,109	6,188,807	687,256	3,025,004	3,745,317	729,064
2035	638,239	445,059	2,908,107	10,188,270	6,189,572	691,144	3,026,162	3,758,441	729,064
Total	33,815,941	31,407,988	103,857,065	479,674,071	304,806,204	35,037,758	165,654,100	174,773,087	43,383,129

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	West Branch (contd.)		Coastal Branch					Total (72)	Grand Total (73)
	Reach 30 (65)	Subtotal (66)	Reach 31A (a (67)	Reach 33A (68)	Reach 34 (69)	Reach 35 (70)	Subtotal (71)		
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	509,730	0	0	0	509,730	3,324,739	4,074,960
1970	0	0	609,990	0	0	0	609,990	3,983,065	4,676,285
1971	0	0	699,061	0	0	0	699,061	5,613,992	6,185,693
1972	420,774	1,820,833	697,581	0	0	0	697,581	12,353,333	12,998,846
1973	621,472	2,248,079	641,642	0	0	0	641,642	14,590,657	15,194,202
1974	723,952	2,223,753	669,301	0	0	0	669,301	16,598,674	17,372,473
1975	842,005	3,140,831	806,447	0	0	0	806,447	19,569,986	20,517,410
1976	(651,534)	1,710,038	840,948	0	0	0	840,948	19,002,248	20,026,602
1977	634,123	2,922,911	872,189	0	0	0	872,189	23,267,488	24,213,092
1978	3,102,082	5,320,298	934,189	0	0	0	934,189	24,836,274	26,030,317
1979	957,759	3,899,933	871,837	0	0	0	871,837	23,422,804	24,676,529
1980	216,933	3,758,013	1,047,517	0	0	0	1,047,517	30,032,339	31,965,390
1981	1,094,190	5,937,733	1,037,683	0	0	0	1,037,683	33,886,532	35,518,423
1982	978,747	6,423,623	1,015,685	0	0	0	1,015,685	39,530,217	41,626,508
1983	3,688,671	8,799,578	1,146,353	0	0	0	1,146,353	54,534,098	56,791,253
1984	2,070,471	9,282,034	1,433,140	0	0	0	1,433,140	65,248,410	68,409,328
1985	872,480	9,678,726	1,852,816	0	0	0	1,852,816	69,524,223	73,096,830
1986	1,340,684	10,999,590	1,715,004	0	0	0	1,715,004	73,445,922	76,715,893
1987	1,405,580	9,381,707	1,689,625	0	0	0	1,689,625	71,441,793	75,216,158
1988	1,452,008	9,504,691	1,964,434	0	0	0	1,964,434	72,360,647	76,075,241
1989	1,499,985	10,941,118	1,770,470	0	0	0	1,770,470	73,919,976	78,691,659
1990	842,638	12,440,450	2,272,305	0	0	0	2,272,305	85,790,930	91,012,055
1991	1,206,917	10,323,337	2,187,628	0	0	0	2,187,628	86,887,262	90,990,837
1992	2,248,633	12,647,418	2,465,796	0	0	0	2,465,796	94,169,011	99,239,903
1993	1,158,905	12,534,187	2,813,376	0	0	0	2,813,376	100,234,576	107,518,268
1994	1,680,830	11,707,076	3,892,698	0	0	0	3,892,698	94,871,128	102,471,124
1995	(396,284)	11,705,921	3,487,710	0	0	0	3,487,710	101,293,426	108,074,513
1996	1,574,258	15,311,031	5,126,352	0	0	0	5,126,352	105,387,930	112,233,333
1997	1,549,257	15,181,732	2,591,713	1,865,842	0	0	4,457,555	112,823,719	118,579,325
1998	1,286,103	14,547,388	3,768,803	1,959,136	261,752	119,034	6,108,725	123,660,729	130,257,242
1999	3,286,165	18,655,371	4,701,302	2,295,973	2,686	7,136	7,007,097	133,767,066	143,359,905
2000	3,086,611	17,239,214	4,341,065	2,634,052	1,717	4,561	6,981,395	133,108,566	141,938,447
2001	3,346,026	17,636,164	3,970,467	2,120,822	1,818	4,832	6,097,939	130,175,111	139,218,877
2002	2,541,766	17,375,052	4,120,258	1,986,358	1,687	4,486	6,112,789	125,824,191	134,928,611
2003	2,281,581	16,844,519	4,122,146	1,987,126	1,827	4,856	6,115,955	123,754,524	132,862,379
2004	2,503,743	16,753,022	4,019,113	1,947,671	1,840	4,890	5,973,514	121,762,274	130,629,106
2005	3,956,274	18,182,857	4,018,102	1,947,259	1,765	4,692	5,971,818	126,055,596	134,920,581
2006	2,315,254	16,490,096	4,015,903	1,946,363	1,604	4,264	5,968,134	120,822,305	129,683,277
2007	2,768,010	16,954,185	4,016,379	1,946,559	1,639	4,356	5,968,933	123,111,658	131,973,496
2008	2,929,341	17,122,900	4,016,688	1,946,684	1,662	4,415	5,969,449	122,511,837	131,374,239
2009	3,026,735	17,228,214	4,017,015	1,946,818	1,686	4,478	5,969,997	123,245,088	132,108,089
2010	2,934,076	17,115,969	4,016,164	1,946,471	1,623	4,315	5,968,573	123,012,035	131,873,482
2011	3,103,454	17,363,981	4,032,044	1,952,630	1,726	4,590	5,990,990	123,708,707	132,606,718
2012	2,930,420	17,196,887	4,032,301	1,952,734	1,745	4,641	5,991,421	123,409,917	132,308,402
2013	3,339,245	17,646,583	4,034,045	1,953,445	1,874	4,981	5,994,345	123,309,629	132,211,296
2014	3,025,651	17,396,449	4,036,755	1,954,550	2,073	5,509	5,998,887	124,446,298	133,352,918
2015	2,883,185	17,252,030	4,036,672	1,954,516	2,068	5,494	5,998,750	122,910,703	131,817,172
2016	3,445,680	17,799,134	4,036,011	1,954,247	2,018	5,364	5,997,640	124,984,154	133,889,415
2017	3,266,499	17,630,058	4,036,441	1,954,422	2,050	5,448	5,998,361	124,248,868	133,154,916
2018	3,175,896	17,587,231	4,038,488	1,955,256	2,200	5,848	6,001,792	124,129,365	133,039,153
2019	3,719,324	18,101,769	4,037,251	1,954,751	2,110	5,606	5,999,718	125,970,622	134,878,151
2020	3,519,168	17,889,694	4,036,759	1,954,553	2,073	5,510	5,998,895	123,861,371	132,768,003
2021	2,729,040	17,078,630	4,035,861	1,954,187	2,008	5,335	5,997,391	122,342,957	131,247,952
2022	2,753,493	17,159,597	4,038,269	1,955,168	2,184	5,806	6,001,427	124,428,765	133,338,160
2023	3,113,752	17,463,095	4,035,838	1,954,177	2,007	5,330	5,997,352	124,722,289	133,627,240
2024	3,890,688	18,268,401	4,037,050	1,954,669	2,095	5,566	5,999,380	124,757,183	133,664,346
2025	2,122,067	16,491,721	4,036,731	1,954,540	2,071	5,505	5,998,847	122,499,347	131,405,929
2026	3,922,507	18,304,316	4,037,226	1,954,741	2,108	5,601	5,999,676	126,547,243	135,454,725
2027	37,264	14,401,103	4,036,498	1,954,447	2,054	5,459	5,998,458	119,769,626	128,675,783
2028	7,109,985	21,504,109	4,037,719	1,954,944	2,143	5,698	6,000,504	127,085,546	135,993,933
2029	1,780,974	16,141,497	4,036,347	1,954,383	2,042	5,431	5,998,203	123,474,877	132,380,756
2030	3,133,539	17,479,706	4,035,702	1,954,121	1,996	5,305	5,997,124	124,960,482	133,865,185
2031	95,467	14,496,757	4,038,088	1,955,091	2,172	5,769	6,001,120	120,186,148	129,095,210
2032	7,096,780	21,494,241	4,037,860	1,955,000	2,154	5,725	6,000,739	128,362,309	137,270,950
2033	2,088,738	16,427,903	4,035,430	1,954,012	1,975	5,250	5,996,667	122,634,373	131,538,578
2034	3,044,358	17,419,806	4,036,957	1,954,632	2,089	5,548	5,999,226	123,273,612	132,180,605
2035	3,982,883	18,377,266	4,037,764	1,954,962	2,147	5,707	6,000,580	127,999,762	136,908,232
Total	146,707,278	870,361,556	201,716,732	77,337,312	334,488	312,341	279,700,873	6,268,941,080	6,696,556,850

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 (a

(Dollars)

Calendar Year	North Bay Aqueduct				South Bay Aqueduct	California Aqueduct			
	Reach 1	Reach 3A	Reach 3B		Reach 1	Reach 1	Reach 4	Reach 14A	Reach 15A
	Barker Slough Pumping Plant (1)	Cordelia Pumping Plant (Solano) (2)	Cordelia Pumping Plant (Napa) (b (3)	Total (4)	South Bay & Del Valle Pumping Plants (c (5)	Banks Pumping Plant (6)	Dos Amigos Pumping Plant (7)	Buena Vista Pumping Plant (8)	Wheeler Ridge Pumping Plant (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	203,209	0	0
1969	0	0	8,551	8,551	257,579	293,741	135,881	0	0
1970	0	0	13,598	13,598	396,358	346,215	211,865	1	0
1971	0	0	10,609	10,609	381,662	574,015	226,601	138,090	17,664
1972	0	0	14,434	14,434	598,702	962,648	500,867	234,825	89,516
1973	0	0	14,449	14,449	493,490	685,014	381,120	303,400	275,021
1974	0	0	17,473	17,473	565,575	769,839	441,290	345,007	350,558
1975	0	0	14,779	14,779	349,758	1,330,133	517,722	543,420	585,744
1976	0	0	20,856	20,856	571,361	1,456,742	566,093	609,951	600,780
1977	0	0	22,635	22,635	512,996	801,033	212,287	166,772	173,208
1978	0	0	21,692	21,692	586,355	2,222,001	621,379	659,054	578,337
1979	0	0	16,237	16,237	605,136	3,456,994	979,137	760,917	724,534
1980	0	0	19,945	19,945	523,369	1,895,620	1,015,182	854,096	826,802
1981	0	0	23,842	23,842	567,692	3,900,497	1,918,937	1,293,281	1,271,780
1982	0	0	12,157	12,157	605,780	3,103,290	1,459,852	1,201,651	1,213,661
1983	0	0	2,342	2,342	82,258	930,714	365,035	370,780	337,973
1984	0	0	4,830	4,830	274,084	1,799,398	931,191	688,847	604,103
1985	0	0	10,186	10,186	452,499	3,219,437	1,632,602	1,403,617	1,401,513
1986	0	0	15,500	15,500	807,983	6,631,027	2,637,800	2,407,261	2,432,677
1987	0	0	27,223	27,223	887,562	5,798,527	2,540,842	2,242,664	2,222,893
1988	18,113	81	24,658	42,852	910,190	6,155,147	2,643,037	2,569,484	2,563,767
1989	31,294	44,803	29,003	105,100	1,160,991	9,833,302	3,944,998	3,971,738	3,977,281
1990	52,224	67,109	40,774	160,107	1,834,951	10,550,526	4,536,212	5,809,442	6,043,441
1991	10,430	10,116	5,251	25,797	378,966	1,935,085	497,012	905,338	1,031,923
1992	13,344	13,069	9,482	35,895	311,251	3,201,505	1,162,443	1,231,171	1,284,210
1993	(11,050)	(8,072)	(5,394)	(24,516)	(153,730)	666,680	394,752	(98,383)	(81,959)
1994	47,208	39,998	29,104	116,310	800,050	5,705,131	2,315,127	2,511,887	2,520,449
1995	20,014	20,621	11,791	52,426	249,362	3,938,272	1,480,851	830,017	741,310
1996	57,321	47,288	23,487	128,096	621,144	8,368,734	4,038,814	2,506,116	2,310,890
1997	69,573	54,721	21,957	146,251	989,534	7,340,225	3,028,738	2,623,049	2,424,659
1998	(12,167)	(10,845)	(5,032)	(28,044)	(118,829)	421,670	(266,836)	(326,797)	(301,404)
1999	179,035	110,910	110,540	400,485	1,666,732	14,346,243	5,489,819	5,665,681	6,380,366
2000	147,491	107,300	108,446	363,237	2,472,101	18,583,626	7,320,787	8,328,754	9,491,659
2001	159,383	113,738	120,697	393,818	2,617,154	19,537,119	7,741,423	8,789,800	10,014,734
2002	152,286	131,618	156,362	440,266	2,164,080	15,905,976	6,634,471	7,300,718	6,992,067
2003	167,865	142,571	173,206	483,642	2,373,915	17,729,412	7,467,600	8,407,271	8,087,048
2004	173,475	167,155	178,290	518,920	2,456,418	18,550,853	7,829,187	9,056,519	8,720,445
2005	167,857	160,328	174,900	503,085	2,356,088	18,208,320	7,661,701	8,963,547	8,653,748
2006	153,533	145,486	161,749	460,768	2,137,981	16,546,707	6,882,657	8,029,410	7,741,390
2007	158,106	148,698	168,397	475,201	2,185,178	17,319,856	7,235,704	8,574,313	8,291,452
2008	161,556	150,786	174,003	486,345	2,215,864	17,674,853	7,398,402	8,801,157	8,517,207
2009	165,227	152,990	179,743	497,960	2,248,259	18,081,560	7,585,237	9,066,803	8,783,229
2010	160,255	147,246	176,160	483,661	2,163,857	17,617,705	7,362,321	8,834,621	8,565,055
2011	171,919	156,760	190,943	519,622	2,303,676	18,755,250	7,895,508	9,505,448	9,221,589
2012	175,149	158,497	196,528	530,174	2,329,203	19,113,814	8,059,163	9,743,666	9,460,095
2013	189,344	170,270	214,174	573,788	2,502,211	20,470,762	8,699,010	10,537,716	10,236,214
2014	211,491	188,566	241,954	642,011	2,771,086	22,684,635	9,737,736	11,852,412	11,523,485
2015	213,894	188,007	249,955	651,856	2,762,879	22,701,101	9,742,623	11,876,789	11,550,093
2016	211,442	183,542	251,942	646,926	2,697,243	22,410,939	9,603,755	11,755,207	11,442,608
2017	217,461	186,446	264,020	667,927	2,739,952	22,893,879	9,828,204	12,067,965	11,753,554
2018	236,404	200,263	292,869	729,536	2,942,985	24,585,882	10,625,192	13,081,563	12,746,765
2019	229,261	191,915	289,711	710,887	2,820,306	23,821,278	10,260,350	12,672,764	12,358,016
2020	227,913	188,588	293,321	709,822	2,771,421	23,522,599	10,116,413	12,512,523	12,203,723
2021	221,109	182,538	285,291	688,938	2,682,510	22,818,445	9,785,644	12,100,029	11,800,146
2022	240,801	198,795	310,699	750,295	2,921,416	24,772,938	10,707,742	13,265,170	12,941,980
2023	220,912	182,376	285,037	688,325	2,680,124	22,941,060	9,839,583	12,198,472	11,903,001
2024	230,821	190,556	297,820	719,197	2,800,324	23,871,639	10,280,019	12,743,555	12,435,303
2025	228,221	188,410	294,466	711,097	2,768,785	23,428,334	10,075,657	12,445,356	12,134,505
2026	232,258	191,741	299,675	723,674	2,817,763	24,027,405	10,354,222	12,840,531	12,532,148
2027	226,317	186,837	292,011	705,165	2,745,688	22,852,863	9,809,336	12,024,756	11,706,858
2028	236,300	195,079	304,891	736,270	2,866,801	24,318,641	10,492,523	12,991,474	12,678,463
2029	225,077	185,813	290,409	701,299	2,730,635	23,138,873	9,938,926	12,277,552	11,971,713
2030	219,807	181,463	283,610	684,880	2,666,709	22,854,397	9,798,747	12,152,205	11,858,665
2031	239,317	197,571	308,784	745,672	2,903,414	24,106,249	10,400,509	12,763,626	12,429,743
2032	237,443	196,023	306,365	739,831	2,880,662	24,442,387	10,550,902	13,067,336	12,753,695
2033	217,569	179,615	280,724	677,908	2,639,562	22,442,227	9,609,109	11,871,401	11,575,496
2034	230,060	189,928	296,840	716,828	2,791,097	23,755,554	10,225,977	12,667,144	12,357,394
2035	236,665	195,380	305,362	737,407	2,871,232	24,443,082	10,550,678	13,084,192	12,770,940
Total	7,769,328	6,612,694	9,293,302	23,675,324	113,033,207	884,036,136	374,870,877	440,674,142	432,805,923

a) Includes extra peaking costs assigned directly to contractors. Refer to Appendix B text discussion of Table B-17 under "Project Water Charges."
b) Costs for the period 1968 through 1987 are for an interim facility.
c) The relatively minor costs of Del Valle Pumping Plant have been combined with those of South Bay Pumping Plant to simplify the allocation procedures.

Table B-12

Variable OMP&R Costs to Be Reimbursed through Variable OMP&R Component of Transportation Charge (a

(Dollars)

Calendar Year	California Aqueduct (continued)								
	Reach 16A	Reach 17E	Reach 18A	Reach 22B	Reach 23	Reach 24	Reach 26A	Reach 28J	Reach 29A
	Chrisman Pumping Plant (10)	Edmonston Pumping Plant (11)	Alamo Powerplant (12)	Pearblossom Pumping Plant (13)	Mojave Siphon Powerplant (14)	Silverwood Lake (d (15)	Devil Canyon Powerplant (16)	Lake Perris (d (17)	Oso Pumping Plant (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	1,530,504	0	219,421	0	47,871	(436,768)	0	158,063
1974	589,117	2,065,821	0	315,705	0	98,204	(496,517)	52,569	189,479
1975	1,130,256	3,947,805	0	577,509	0	25,957	(1,033,054)	65,966	349,000
1976	1,222,413	4,237,916	0	869,201	0	122,366	(1,459,979)	104,297	245,397
1977	351,987	1,160,084	0	296,678	0	261,759	(1,115,096)	50,547	18,075
1978	1,046,051	3,657,439	0	1,560,069	0	0	(3,038,194)	0	69,043
1979	1,457,336	4,991,195	0	1,723,257	0	123,544	(3,159,826)	359,151	119,059
1980	1,651,996	5,440,639	0	1,746,524	0	155,560	(4,571,397)	0	36,770
1981	2,767,936	9,040,773	0	2,170,693	0	292,470	(3,684,631)	376,175	444,463
1982	2,459,314	8,399,644	0	1,513,452	0	0	(2,736,072)	0	539,487
1983	620,372	1,807,848	0	350,363	0	384,388	(5,478,829)	0	118,868
1984	1,148,419	3,461,189	0	633,253	0	0	(7,327,407)	(9,457)	236,192
1985	2,829,398	9,343,162	0	1,210,800	0	0	(10,477,629)	(54,966)	874,381
1986	5,042,319	17,016,211	(1,013,756)	2,377,023	0	0	(11,484,996)	0	1,269,907
1987	4,498,113	14,739,898	(1,025,916)	1,847,434	0	136,252	(10,814,602)	55,406	1,323,825
1988	5,210,649	16,915,500	(742,800)	2,394,787	0	38,058	(14,495,967)	0	1,423,600
1989	8,447,360	28,205,927	(766,953)	4,137,172	0	668,760	(18,532,961)	91,002	2,014,462
1990	13,778,005	48,694,329	(834,989)	6,545,925	0	71,360	(20,911,839)	148,178	2,880,007
1991	2,454,016	8,682,829	(269,625)	1,005,414	0	0	(4,884,013)	0	535,507
1992	2,624,837	8,703,506	(930,167)	1,180,417	0	194,647	(9,512,298)	(59,321)	687,334
1993	(446,629)	(2,157,351)	(56,410)	(224,905)	0	(47,204)	(7,502,549)	0	51,599
1994	5,347,926	18,421,903	(58,712)	2,598,320	0	0	(11,662,318)	150,944	1,208,085
1995	1,490,599	4,868,229	(1,215,981)	1,020,182	0	622,913	(9,742,248)	0	151,181
1996	4,953,825	17,191,751	(2,811,564)	2,695,619	(923,213)	912,185	(12,358,465)	0	896,292
1997	5,516,125	19,523,767	(2,567,695)	3,202,465	(1,744,526)	0	(13,801,218)	6,305	846,242
1998	(641,503)	(2,366,267)	(1,964,797)	(446,095)	(1,214,367)	0	(9,949,088)	(366)	(65,286)
1999	13,418,279	47,356,104	(5,058,683)	9,990,598	(7,401,159)	318,883	(30,883,408)	0	1,311,411
2000	20,071,107	70,943,608	(5,356,640)	13,424,411	(7,898,681)	0	(32,748,027)	0	2,676,169
2001	21,173,059	74,857,695	(5,275,645)	14,239,192	(7,917,955)	0	(32,774,076)	107,958	2,787,929
2002	16,333,176	61,256,089	(5,059,084)	11,558,767	(6,183,909)	0	(29,368,199)	0	2,159,735
2003	18,922,764	71,012,655	(5,326,340)	13,903,276	(6,864,541)	1,426,336	(33,145,933)	67,217	2,364,480
2004	20,496,344	76,718,933	(5,084,881)	12,308,285	(6,177,187)	699,272	(28,965,152)	293,611	3,615,069
2005	20,354,885	76,228,357	(5,267,121)	12,231,702	(6,326,980)	0	(29,538,932)	0	3,616,670
2006	18,202,528	68,149,245	(5,181,241)	10,921,445	(5,882,362)	974,720	(29,561,967)	435,633	3,228,383
2007	19,514,103	73,100,751	(5,449,127)	11,796,387	(6,592,286)	0	(30,364,960)	0	3,463,018
2008	20,049,879	75,117,910	(5,496,426)	12,045,075	(6,543,183)	275,886	(30,473,841)	107,161	3,596,385
2009	20,682,639	77,503,430	(5,580,124)	12,468,625	(6,841,316)	0	(30,823,346)	58,849	3,706,235
2010	20,173,789	75,607,896	(5,617,761)	12,172,068	(6,698,574)	100,871	(31,218,848)	0	3,620,225
2011	21,724,642	81,430,103	(5,677,298)	13,096,875	(6,767,678)	0	(31,369,466)	179,276	3,912,283
2012	22,292,120	83,569,026	(5,722,323)	13,488,264	(6,866,929)	0	(31,889,695)	0	4,007,210
2013	24,124,293	90,446,386	(5,699,249)	14,513,827	(6,826,303)	945,278	(32,170,297)	0	4,374,568
2014	27,165,769	101,865,928	(5,886,298)	16,424,939	(7,399,087)	0	(32,145,739)	233,254	4,909,539
2015	27,230,958	102,114,669	(5,838,996)	16,418,823	(7,147,842)	971,357	(32,635,532)	0	4,943,776
2016	26,984,705	101,209,229	(5,849,322)	16,261,729	(7,523,007)	0	(32,727,812)	284,642	4,916,326
2017	27,722,932	103,988,561	(5,882,065)	16,705,878	(7,322,458)	267,639	(33,334,167)	0	5,061,165
2018	30,070,377	112,803,351	(5,976,226)	18,095,957	(7,039,027)	0	(33,649,378)	216,432	5,508,418
2019	29,159,515	109,402,638	(5,937,902)	17,552,095	(7,400,712)	0	(34,020,583)	0	5,351,527
2020	28,797,385	108,046,776	(5,977,849)	17,236,537	(7,321,042)	201,805	(33,851,151)	435,157	5,326,759
2021	27,844,343	104,468,618	(5,965,792)	16,673,913	(7,101,737)	1,210,806	(34,260,305)	87,602	5,145,218
2022	30,542,587	114,601,418	(5,931,657)	18,398,704	(7,417,387)	145,816	(34,252,237)	0	5,609,175
2023	28,091,533	105,407,277	(5,979,765)	16,859,620	(7,536,488)	0	(34,063,498)	146,313	5,184,978
2024	29,348,003	110,122,830	(5,960,938)	17,609,914	(7,453,478)	284,656	(34,239,535)	0	5,421,005
2025	28,631,530	107,417,982	(5,989,613)	17,300,956	(7,711,893)	81,641	(33,801,335)	506,047	5,229,189
2026	29,577,935	110,989,570	(5,920,272)	17,771,042	(7,876,656)	0	(34,109,814)	0	5,454,820
2027	27,609,839	103,556,536	(5,922,194)	17,005,812	(7,072,064)	464,082	(33,801,740)	785,032	4,897,490
2028	29,921,284	112,277,572	(5,954,138)	17,868,711	(7,438,649)	1,180,957	(34,208,812)	0	5,563,069
2029	28,247,727	105,979,664	(5,955,765)	17,208,591	(7,612,522)	0	(34,169,008)	44,519	5,106,717
2030	27,987,797	105,019,690	(5,960,235)	16,818,403	(7,313,233)	0	(34,287,086)	0	5,159,107
2031	29,317,029	109,965,871	(5,887,574)	17,989,350	(7,179,364)	1,802,429	(34,295,824)	0	5,228,654
2032	30,099,375	112,947,858	(5,982,538)	17,993,253	(7,641,513)	0	(33,778,409)	623,145	5,589,753
2033	27,312,915	102,472,186	(5,911,343)	16,553,952	(7,301,534)	515,714	(34,263,615)	0	4,970,120
2034	29,162,455	109,420,897	(5,959,193)	17,456,628	(7,285,941)	744,953	(34,214,307)	43,741	5,397,318
2035	30,141,800	113,107,336	(5,847,392)	18,108,284	(7,595,460)	0	(34,189,459)	0	5,558,436
Total	1,004,652,060	3,728,503,512	(225,588,375)	610,015,958	(268,362,243)	16,726,406	(1,410,266,478)	5,992,019	180,686,573

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, 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 (a

(Dollars)

Calendar Year	California Aqueduct (continued)							
	Reach 29G	Reach 29H	Reach 29J	Reach 30	Reach 31A	Reach 33A		
	Warne Powerplant (19)	Pyramid Lake (d (20)	Castaic Powerplant (21)	Castaic Lake (d (22)	Las Perillas & Badger Hill Pumping Plants (23)	Devil's Den, Bluestone & Polonio Pumping Plants (24)	Total (25)	Grand Total (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	774,515	1,118,175
1969	0	0	0	78,350	0	0	507,972	774,102
1970	0	0	0	136,429	0	0	694,510	1,104,466
1971	0	0	0	166,296	0	0	1,122,666	1,514,937
1972	0	3,579	(193,058)	72,661	237,638	0	2,686,672	3,299,808
1973	0	7,345	(1,057,564)	0	120,913	0	2,669,174	3,177,113
1974	0	42,376	(1,540,855)	5,565	118,582	0	3,346,740	3,929,788
1975	0	0	(2,445,397)	10,233	94,848	0	5,700,142	6,064,679
1976	0	60,086	(1,940,099)	1,057,040	141,260	0	7,893,464	8,485,681
1977	0	0	(607,378)	(1,210,585)	71,311	0	630,682	1,166,313
1978	0	1,069,178	(1,542,479)	0	183,605	0	7,085,483	7,693,530
1979	0	0	(2,384,748)	(10,062)	195,432	0	9,335,920	9,957,293
1980	0	459,079	(356,823)	1,567,958	168,458	0	10,890,464	11,433,778
1981	0	0	(2,834,322)	0	169,177	0	17,127,229	17,718,763
1982	(783,626)	0	(3,463,971)	0	168,390	0	13,075,072	13,693,009
1983	(826,126)	71,501	(4,781,943)	(1,745,306)	18,067	0	(7,456,295)	(7,371,695)
1984	(1,991,600)	0	(2,294,902)	(2,167,088)	120,066	0	(4,167,796)	(3,888,882)
1985	(5,930,176)	0	(15,698,639)	0	148,350	0	(10,098,150)	(9,635,465)
1986	(5,579,301)	0	(11,072,448)	0	297,887	0	10,961,611	11,785,094
1987	(6,292,822)	81,413	(11,557,616)	(42,165)	246,244	0	6,000,390	6,915,175
1988	(7,003,483)	43,133	(12,295,001)	(208,931)	216,381	0	5,427,361	6,380,403
1989	(8,238,763)	8,870	(14,515,993)	132,766	284,057	0	23,663,025	24,929,116
1990	(11,095,239)	325,969	(20,471,398)	24,607	416,833	0	46,511,369	48,506,427
1991	(3,603,479)	436,612	(6,581,699)	0	3,609	0	2,148,529	2,553,292
1992	(5,272,727)	30,452	(9,167,655)	(1,128,423)	102,735	0	(5,667,334)	(5,320,188)
1993	(3,380,474)	(667,691)	(7,895,978)	(2,738,787)	(111,307)	0	(24,296,596)	(24,474,842)
1994	(5,835,220)	0	(10,565,857)	(66,765)	206,713	0	12,797,613	13,713,973
1995	(1,179,155)	554,966	(4,049,616)	0	243,459	0	(245,021)	56,767
1996	(4,248,531)	0	(8,457,232)	0	296,170	0	15,371,391	16,120,631
1997	(4,164,882)	475,715	(7,973,677)	10,339	300,268	208,841	15,254,740	16,390,525
1998	(1,649,499)	0	(4,260,983)	(652,689)	(56,665)	(99,464)	(23,840,436)	(23,987,309)
1999	(5,145,863)	123,918	(9,701,057)	0	519,639	1,864,030	48,594,801	50,662,018
2000	(8,350,656)	0	(15,103,648)	0	790,800	2,343,643	84,516,912	87,352,250
2001	(8,194,000)	0	(14,861,399)	0	838,256	2,484,283	93,548,373	96,559,345
2002	(8,368,390)	0	(13,589,073)	467,996	852,258	2,298,922	69,191,520	71,795,866
2003	(8,567,946)	0	(13,740,011)	761,293	923,186	2,490,244	85,918,011	88,775,568
2004	(12,686,340)	0	(20,407,840)	478,304	933,386	2,508,438	88,887,246	91,862,584
2005	(13,146,795)	0	(21,253,627)	0	878,449	2,405,985	83,669,909	86,529,082
2006	(12,979,739)	0	(20,933,896)	625,084	776,488	2,183,259	70,157,744	72,756,493
2007	(13,614,201)	0	(21,917,835)	167,092	770,608	2,231,453	74,526,328	77,186,707
2008	(13,916,125)	0	(22,430,297)	4,706	781,429	2,262,790	77,772,968	80,475,177
2009	(14,099,041)	0	(22,774,068)	0	792,854	2,295,874	80,907,440	83,653,659
2010	(14,277,787)	0	(23,106,828)	0	763,089	2,209,682	76,107,524	78,755,042
2011	(14,460,576)	0	(23,446,310)	0	812,397	2,352,461	87,164,504	89,987,802
2012	(14,667,734)	0	(23,749,180)	31,689	821,399	2,378,530	90,069,115	92,928,492
2013	(14,882,737)	0	(24,123,805)	0	882,409	2,555,200	104,083,272	107,159,271
2014	(15,066,152)	0	(24,447,512)	12,026	977,229	2,829,771	125,271,935	128,685,032
2015	(15,219,490)	0	(24,678,742)	161,080	974,335	2,821,390	125,986,392	129,401,127
2016	(15,510,732)	0	(25,124,316)	0	951,189	2,754,365	121,839,505	125,183,674
2017	(15,716,136)	0	(25,459,124)	0	966,251	2,797,977	126,340,055	129,747,934
2018	(15,935,278)	0	(25,784,389)	0	1,037,850	3,005,310	143,392,799	147,065,320
2019	(16,177,895)	0	(26,131,913)	0	994,587	2,880,035	134,783,800	138,314,993
2020	(16,452,537)	0	(26,471,381)	0	977,349	2,830,115	132,133,181	135,614,424
2021	(16,413,812)	0	(26,404,420)	320,939	945,993	2,739,320	125,794,950	129,166,398
2022	(16,401,680)	0	(26,437,724)	334,592	1,030,244	2,983,284	144,892,965	148,564,676
2023	(16,512,877)	0	(26,633,109)	0	945,151	2,736,882	125,528,133	128,896,582
2024	(16,513,010)	0	(26,642,615)	0	987,540	2,859,627	135,154,515	138,674,036
2025	(16,208,405)	0	(26,036,415)	955,201	976,418	2,827,423	132,262,578	135,742,460
2026	(16,528,435)	0	(26,644,915)	0	993,690	2,877,436	136,338,707	139,880,144
2027	(15,219,202)	0	(24,578,643)	3,104,839	968,273	2,803,836	130,995,709	134,446,562
2028	(16,425,006)	0	(26,657,150)	0	1,010,984	2,927,514	140,547,437	144,150,508
2029	(16,084,094)	0	(25,796,911)	1,302,390	962,965	2,788,465	129,349,802	132,781,736
2030	(16,518,417)	0	(26,618,603)	0	940,421	2,723,184	124,615,042	127,966,631
2031	(15,341,636)	0	(24,797,559)	3,072,671	1,023,895	2,964,901	143,562,970	147,212,056
2032	(16,416,969)	0	(26,655,797)	0	1,015,872	2,941,667	141,550,017	145,170,510
2033	(16,172,526)	0	(25,945,989)	973,969	930,848	2,695,460	122,328,390	125,645,860
2034	(16,502,036)	0	(26,615,696)	14,510	984,287	2,850,205	134,503,890	138,011,815
2035	(16,541,148)	0	(26,648,123)	0	1,012,547	2,932,039	140,887,752	144,496,391
Total	(608,310,506)	3,126,501	(1,032,357,251)	6,198,500	38,147,046	97,544,377	4,279,095,177	4,415,803,709

Capital and Operating Costs of Project Conservation Facilities to Be Reimbursed through Delta Water Charge

(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 (6)	Total (7)
				Application of Oroville Power Revenues to:			
	Capital Costs (a (1)	Capital Cost Credits (b (2)	Operating Costs (c (3)	Capital Costs (d (4)	Operating Costs (e (5)		
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)	5,393,011	(14,650,000)	(1,500,000)	287,374	(6,096,952)
1973	3,985,414	(136,997)	6,135,774	(14,650,000)	(1,500,000)	203,384	(5,962,425)
1974	6,660,000	(137,503)	6,944,723	(17,950,000)	(1,500,000)	201,907	(5,780,873)
1975	8,084,450	(234,567)	7,697,390	(14,650,000)	(1,500,000)	146,188	(456,539)
1976	5,870,531	(204,944)	7,067,037	(14,650,000)	(1,500,000)	205,234	(3,212,142)
1977	21,285,849	(150,214)	10,547,977	(14,650,000)	(1,500,000)	857,419	16,391,031
1978	7,713,252	(64,566)	12,854,005	(14,650,000)	(1,500,000)	2,131,561	6,484,252
1979	9,030,801	0	7,943,897	(14,650,000)	(1,500,000)	3,734,002	4,558,700
1980	10,372,763	0	13,272,310	(14,650,000)	(1,500,000)	3,638,851	11,133,924
1981	11,194,479	0	10,408,134	(14,650,000)	(1,500,000)	4,597,474	10,050,087
1982	16,634,428	0	16,249,997	(14,650,000)	(1,500,000)	4,594,682	21,329,107
1983	12,037,206	0	22,300,033	(34,705,000)	(8,735,000)	3,751,993	(5,350,768)
1984	8,706,748	0	22,750,560	(14,650,000)	(10,348,000)	2,979,126	9,438,434
1985	12,027,235	0	23,822,575	(14,650,000)	(8,079,000)	2,069,024	15,189,834
1986	20,464,281	0	26,482,374	(14,650,000)	(9,107,000)	1,602,419	24,792,074
1987	30,814,266	0	22,935,597	(14,650,000)	(9,451,000)	1,762,179	31,411,042
1988	33,627,367	0	25,418,942	(14,650,000)	(8,677,000)	1,808,899	37,528,208
1989	10,408,929	0	27,762,997	(14,650,000)	(8,104,000)	2,677,672	18,095,598
1990	27,809,154	0	36,447,729	(14,650,000)	(8,497,000)	1,436,397	42,546,280
1991	35,963,843	0	75,638,578	(14,650,000)	(9,487,000)	1,727,284	89,192,705
1992	27,655,865	0	31,471,540	(14,650,000)	(8,526,000)	1,718,739	37,670,144
1993	21,155,446	0	35,260,677	(14,650,000)	(8,768,000)	1,707,311	34,705,434
1994	13,620,411	0	38,495,992	(14,650,000)	(7,484,000)	2,133,641	32,116,044
1995	14,253,704	0	43,763,060	(14,650,000)	(7,041,000)	2,040,939	38,366,703
1996	10,517,571	0	48,170,303	(14,650,000)	(7,288,000)	2,447,563	39,197,437
1997	13,924,922	0	50,045,965	(14,650,000)	(7,009,000)	1,699,149	44,011,036
1998	3,699,121	0	53,519,239	(14,650,000)	(8,155,000)	1,193,198	35,606,558
1999	10,182,681	0	62,186,406	(14,650,000)	(9,198,000)	3,738,000	52,259,087
2000	25,427,195	0	65,945,463	(14,650,000)	(7,893,620)	3,796,000	72,625,038
2001	24,939,403	0	64,104,689	(14,650,000)	(7,628,250)	3,961,000	70,726,842
2002	11,401,448	0	62,058,091	(14,650,000)	(7,153,092)	4,179,000	55,835,447
2003	8,455,518	0	56,910,496	(14,650,000)	(7,153,092)	3,679,000	47,241,922
2004	7,165,944	0	59,014,276	(14,650,000)	(7,153,092)	3,179,000	47,556,128
2005	944,945	0	57,615,046	(14,650,000)	(7,153,092)	3,129,000	39,885,899
2006	661,145	0	49,176,102	(14,650,000)	(7,153,092)	3,129,000	31,163,155
2007	377,345	0	54,628,501	(14,650,000)	(7,153,092)	3,129,000	36,331,754
2008	377,345	0	52,677,322	(14,650,000)	(7,153,092)	3,129,000	34,380,575
2009	377,345	0	52,664,422	(14,650,000)	(7,153,092)	3,129,000	34,367,675
2010	377,345	0	51,933,140	(14,650,000)	(7,153,092)	3,129,000	33,636,393
2011	377,345	0	51,048,300	(14,650,000)	(7,153,092)	0	29,622,553
2012	377,345	0	49,707,160	(14,650,000)	(7,153,092)	0	28,281,413
2013	377,345	0	52,480,651	(14,650,000)	(7,153,092)	0	31,054,904
2014	377,345	0	51,149,026	(14,650,000)	(7,153,092)	0	29,723,279
2015	377,345	0	49,373,810	(14,650,000)	(7,153,092)	0	27,948,063
2016	377,345	0	52,674,280	(14,650,000)	(7,153,092)	0	31,248,533
2017	377,345	0	51,939,869	(14,650,000)	(7,153,092)	0	30,514,122
2018	377,345	0	52,330,713	(14,650,000)	(7,153,092)	0	30,904,966
2019	377,345	0	51,318,193	(14,650,000)	(7,153,092)	0	29,892,446
2020	377,345	0	49,119,502	(14,650,000)	(7,153,092)	0	27,693,755
2021	377,345	0	52,822,119	(14,650,000)	(7,153,092)	0	31,396,372
2022	377,345	0	51,729,782	(14,650,000)	(7,153,092)	0	30,304,035
2023	377,345	0	49,085,240	(14,650,000)	(7,153,092)	0	27,659,493
2024	377,345	0	49,923,951	(14,650,000)	(7,153,092)	0	28,498,204
2025	377,345	0	53,947,436	(14,650,000)	(7,153,092)	0	32,521,689
2026	377,345	0	51,619,884	(14,650,000)	(7,153,092)	0	30,194,137
2027	377,345	0	48,695,504	(14,650,000)	(7,153,092)	0	27,269,757
2028	377,345	0	49,123,874	(14,650,000)	(7,153,092)	0	27,698,127
2029	377,345	0	54,487,516	(14,650,000)	(7,153,092)	0	33,061,769
2030	377,345	0	50,708,430	(14,650,000)	(7,153,092)	0	29,282,683
2031	377,345	0	49,018,947	(14,650,000)	(7,153,092)	0	27,593,200
2032	377,345	0	48,605,444	(14,650,000)	(7,153,092)	0	27,179,697
2033	377,345	0	53,058,828	(14,650,000)	(7,153,092)	0	31,633,081
2034	377,345	0	50,170,911	(14,650,000)	(7,153,092)	0	28,745,164
2035	377,345	0	50,668,807	(14,650,000)	(7,153,092)	0	29,243,060
Total	1,052,864,965	(11,528,320)	2,667,492,808	(1,002,213,000)	(422,180,998)	99,910,153	2,384,345,608

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) Revenues credited 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 (1998) are reflected in the Delta Water Charge.

Table B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (a (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (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	199,999	371,047	571,046
1981	227,606	383,086	610,692	(33,738)	(29,856)	(65,637)	(129,231)	(52,132)	(93,630)	(145,762)
1982	549,164	870,611	1,419,775	7,875	8,322	27,065	43,262	(17,918)	(31,966)	(49,884)
1983	1,254,900	1,433,061	2,687,961	138,412	131,516	339,246	609,174	51,353	96,194	147,547
1984	2,547,878	2,750,040	5,297,918	152,991	140,971	351,920	645,882	51,514	96,820	148,334
1985	7,143,121	6,443,613	13,586,734	19,777	19,245	53,490	92,512	34,362	67,123	101,485
1986	10,565,937	16,926,630	27,492,567	32,033	31,581	88,068	151,682	114,423	241,325	355,748
1987	7,979,832	12,599,507	20,579,339	50,153	48,674	138,959	237,786	461,509	1,012,016	1,473,525
1988	2,312,874	4,343,440	6,656,314	116,181	112,293	302,460	530,934	515,980	1,124,644	1,640,624
1989	1,224,538	1,553,352	2,777,890	108,321	102,803	260,094	471,218	433,576	934,052	1,367,628
1990	442,792	824,054	1,266,846	217,274	217,686	608,255	1,043,215	563,237	1,205,397	1,768,634
1991	99,874	89,298	189,172	413,506	383,442	946,433	1,743,381	797,298	1,684,975	2,482,273
1992	57,429	62,442	119,871	182,567	170,358	443,362	796,287	1,269,846	2,628,303	3,898,149
1993	122,423	128,634	251,057	129,344	125,311	342,416	597,071	4,240,142	8,446,411	12,686,553
1994	71,274	83,270	154,544	46,042	58,051	229,649	333,742	17,190,028	34,208,417	51,398,445
1995	30,605	29,271	59,876	97,807	97,063	257,486	452,356	40,791,112	80,267,400	121,058,512
1996	20,275	19,069	39,344	49,837	48,041	127,455	225,333	29,340,097	64,094,627	93,434,724
1997	20,035	107,778	127,813	83,152	79,503	210,725	373,380	9,131,806	19,916,522	29,048,328
1998	18,458	23,108	41,566	35,854	34,069	87,946	157,869	2,491,443	5,621,820	8,113,263
1999	9,588	13,569	23,157	44,515	40,700	96,984	182,199	5,336,208	9,844,695	15,180,903
2000	319	755	1,074	105,104	96,097	228,989	430,190	4,714,186	8,697,134	13,411,320
2001	319	755	1,074	17,878	16,346	38,952	73,176	752,938	1,389,085	2,142,023
2002	319	755	1,074	7,641	6,986	16,649	31,276	3,155	5,821	8,976
2003	319	755	1,074	7,641	6,986	16,649	31,276	3,155	5,821	8,976
2004	282	668	950	6,758	6,179	14,725	27,662	3,035	5,599	8,634
2005	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	39,039,884	50,268,789	89,308,673	8,570,857	10,393,002	34,325,676	53,289,535	121,470,677	247,533,762	369,004,439

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

(Dollars)

Calendar Year	San Joaquin Valley Area									
				Kern County Water Agency						
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (b (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Municipal and Industrial (c (15)	Agricultural (16)	County of Kings (17)	Oak Flat Water District (18)	Tulare Lake Basin Water Storage District (19)	Total (20)
1952	389	19	59	938	120	8,486	19	13	784	10,827
1953	1,076	53	161	2,888	344	25,413	56	33	2,158	32,182
1954	1,350	67	200	3,374	416	30,073	70	42	2,719	38,311
1955	676	36	100	1,498	198	13,701	36	22	1,371	17,638
1956	727	33	107	2,703	272	22,378	34	26	1,416	27,696
1957	932	38	139	6,047	495	45,852	38	30	1,707	55,278
1958	2,308	100	345	14,372	1,154	109,271	103	61	4,367	132,081
1959	7,384	363	2,517	26,219	2,597	232,679	372	381	14,757	287,269
1960	12,940	629	3,666	34,053	4,155	324,483	644	498	25,696	406,764
1961	21,849	1,063	3,957	51,406	6,500	497,843	1,087	599	43,376	627,680
1962	49,320	2,410	7,866	94,932	13,836	946,345	2,466	1,879	98,141	1,217,195
1963	208,758	10,686	32,171	364,014	55,715	3,670,456	10,933	5,990	425,330	4,784,053
1964	328,285	16,961	64,891	600,151	88,904	6,163,134	17,349	11,942	672,011	7,963,628
1965	538,215	27,481	117,998	1,098,999	152,931	11,110,444	28,115	21,802	1,095,126	14,191,111
1966	1,107,759	52,587	279,171	2,218,832	339,222	23,042,490	53,788	38,891	2,173,090	29,305,830
1967	852,537	39,539	445,560	2,012,745	286,990	21,678,011	40,444	34,775	1,653,428	27,044,029
1968	198,739	9,739	166,266	1,104,133	70,088	10,363,571	9,962	12,237	396,074	12,330,809
1969	94,436	4,794	35,472	616,518	27,216	5,695,500	4,902	7,302	191,574	6,677,714
1970	54,345	2,719	21,684	414,661	15,521	3,667,905	2,783	3,999	109,471	4,293,088
1971	25,462	1,290	12,094	190,552	7,112	1,443,569	1,320	540	51,620	1,733,559
1972	11,589	589	8,354	82,887	3,409	642,238	601	343	23,526	773,536
1973	6,657	336	10,202	39,975	1,976	404,967	341	220	13,449	478,123
1974	9,478	469	11,044	45,421	2,767	430,848	478	326	18,981	519,812
1975	13,328	678	5,245	36,469	3,710	348,715	692	426	27,049	436,312
1976	17,507	837	12,616	53,085	5,621	590,476	856	1,152	34,454	716,604
1977	9,671	437	47,790	36,478	3,753	771,276	445	494	18,496	888,840
1978	23,499	(30,407)	6,178	54,218	6,579	528,500	1,208	1,402	47,447	638,624
1979	25,051	1,295	5,665	53,867	6,609	515,752	1,324	1,862	51,294	662,719
1980	144,981	(4,617)	31,161	321,889	38,126	2,960,865	7,682	7,144	297,216	3,804,447
1981	(5,426)	(15,463)	202	(44,773)	(1,220)	(341,179)	(297)	1,753	(11,323)	(417,726)
1982	49,915	2,584	6,601	83,284	13,142	627,854	2,638	1,252	102,288	889,558
1983	52,429	(35,296)	12,122	110,465	13,872	993,163	2,769	1,327	107,337	1,258,188
1984	86,344	4,474	14,302	154,801	22,775	1,508,615	4,571	2,678	177,020	1,975,580
1985	25,437	1,311	5,648	47,055	6,765	451,231	1,342	1,176	52,014	591,979
1986	38,310	(41,067)	9,864	71,658	10,321	737,107	2,008	777	78,141	907,119
1987	28,769	1,476	7,004	55,535	7,968	571,530	1,509	1,491	58,679	733,961
1988	52,328	2,831	17,079	70,574	16,049	839,788	2,893	4,620	109,712	1,115,874
1989	156,097	8,019	27,551	352,102	43,839	3,527,344	8,200	12,133	318,606	4,453,891
1990	290,031	15,021	49,643	548,002	86,662	5,626,640	15,363	22,672	594,458	7,248,492
1991	349,479	18,106	60,437	580,721	91,815	6,015,099	18,518	23,490	716,431	7,874,096
1992	126,065	6,447	28,074	241,981	34,612	2,512,885	6,592	10,890	256,718	3,224,264
1993	86,115	4,376	30,247	174,632	23,840	1,892,397	4,474	4,698	174,771	2,395,550
1994	64,222	3,294	23,812	123,651	17,959	1,359,301	3,369	2,174	130,985	1,728,767
1995	82,969	(1,000)	72,732	167,698	24,388	2,236,621	4,355	2,824	169,317	2,759,904
1996	27,577	(61,914)	51,983	68,808	9,773	1,093,636	1,434	1,587	56,024	1,248,908
1997	144,304	7,448	49,870	253,918	40,217	2,849,153	7,609	3,805	295,218	3,651,542
1998	90,312	(119,988)	26,215	153,423	54,823	1,667,215	4,782	2,558	185,121	2,064,461
1999	191,866	9,939	30,385	319,712	58,263	3,317,191	10,153	2,238	393,278	4,333,025
2000	230,597	11,971	35,491	373,183	28,336	3,866,319	12,230	3,159	473,222	5,034,508
2001	153,448	7,968	23,854	246,839	670	2,551,806	8,139	2,119	314,931	3,309,774
2002	3,342	174	1,507	5,838	434	64,905	177	327	6,859	83,563
2003	3,342	174	1,507	5,838	197	64,905	177	327	6,859	83,326
2004	2,956	153	1,450	5,163	0	58,519	157	289	6,067	74,754
2005	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	6,100,076	(28,738)	1,920,259	13,753,432	1,751,836	140,377,286	311,310	264,795	12,268,861	176,719,117

b) 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; $43,033 in 1986; $5,261 in 1995; $63,318 in 1996; and $124,667 in 1998 in accordance with letters of agreement with the district.

c) 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

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (21)	Castaic Lake Water Agency (d (22)	Coachella Valley Water District (23)	Crestline-Lake Arrowhead Water Agency (24)	Desert Water Agency (25)	Littlerock Creek Irrigation District (26)	Mojave Water Agency (27)	Palmdale Water District (28)	San Bernardino Valley Municipal Water District (29)	San Gabriel Valley Municipal Water District (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	5,822,709	3,079,427	1,690,259	539,852	2,787,631	121,302	3,256,507	865,454	10,898,187	2,769,647
1970	5,032,961	3,277,781	2,050,790	695,344	3,382,250	106,383	3,872,370	736,777	13,795,812	3,457,107
1971	2,577,512	2,146,958	1,071,521	338,583	1,767,180	48,337	2,087,226	347,057	8,137,056	1,987,121
1972	973,440	283,262	331,760	92,079	547,143	19,135	668,553	134,362	2,691,165	697,963
1973	354,409	914,318	158,583	82,225	261,560	6,304	238,095	46,103	1,760,600	403,589
1974	451,451	280,882	259,176	74,112	427,434	8,143	518,452	59,144	1,617,395	425,927
1975	253,437	246,504	193,631	52,820	319,338	4,954	392,109	33,995	1,533,663	407,917
1976	237,537	255,247	136,750	37,235	225,528	4,245	277,805	31,001	962,276	255,900
1977	199,550	371,467	91,384	25,857	150,713	3,755	183,607	26,835	591,447	155,535
1978	302,110	470,267	78,578	22,233	129,592	5,233	157,814	38,655	429,078	111,787
1979	358,559	938,984	81,968	21,835	135,178	5,978	167,263	44,519	404,284	108,604
1980	1,869,024	1,777,296	424,041	113,270	699,331	32,461	864,671	241,087	2,042,591	548,586
1981	(157,709)	610,792	(46,846)	(8,639)	(77,255)	(2,558)	(102,190)	(19,463)	(139,876)	(42,457)
1982	1,569,274	861,927	301,121	80,161	496,599	26,427	617,831	198,097	1,443,678	394,372
1983	2,079,564	521,348	399,671	117,839	659,136	34,980	810,334	262,080	2,164,586	592,173
1984	1,523,910	295,783	300,100	86,322	494,927	27,366	610,853	189,257	1,568,240	429,336
1985	902,818	158,809	222,844	64,041	367,513	13,382	453,083	108,692	1,148,907	314,025
1986	899,309	104,859	243,751	63,880	401,994	10,673	501,302	103,877	1,167,671	318,846
1987	345,933	105,623	197,230	51,956	325,269	5,986	404,724	43,435	959,821	261,275
1988	271,694	174,155	95,985	30,642	158,300	4,166	190,377	30,418	646,800	172,734
1989	1,061,884	434,395	352,243	104,967	580,922	17,759	709,242	129,983	1,883,310	508,769
1990	643,361	365,490	365,333	107,307	602,507	7,375	738,921	66,525	1,955,476	530,098
1991	837,218	402,267	404,165	132,876	666,554	12,177	807,469	93,753	2,449,138	667,309
1992	635,497	358,097	289,887	142,726	478,075	9,610	534,994	77,104	2,450,908	670,351
1993	634,536	332,090	232,840	188,834	384,008	10,202	361,413	74,009	4,426,570	1,203,625
1994	466,519	165,200	135,643	98,911	223,709	7,238	220,863	53,101	2,633,389	714,782
1995	459,986	293,309	134,309	81,661	221,505	7,436	233,118	54,544	2,065,292	559,774
1996	299,621	206,679	120,590	48,430	198,875	4,881	231,842	35,788	3,770,230	1,011,506
1997	452,238	254,958	106,993	26,888	176,453	7,620	220,819	56,124	1,551,108	415,803
1998	260,920	214,102	68,055	42,839	112,242	4,436	117,294	32,886	1,166,928	316,558
1999	485,843	451,584	226,882	90,405	374,192	9,022	399,964	62,330	1,693,687	395,722
2000	440,590	388,527	168,973	42,895	278,670	7,476	350,204	54,073	777,859	213,506
2001	277,776	123,054	50,023	12,772	82,498	4,649	104,072	34,887	228,336	62,810
2002	17,580	8,670	3,180	804	5,245	294	6,587	2,208	14,223	3,906
2003	17,580	8,670	3,180	804	5,245	294	6,587	2,208	14,223	3,906
2004	15,548	7,839	2,812	711	4,639	260	5,826	1,953	12,579	3,455
2005	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	51,914,582	33,094,695	15,044,769	4,823,921	24,812,082	934,356	29,537,042	6,839,393	103,134,985	26,970,022

d) Costs from Table B-10 allocated to Castaic Lake Water Agency are reduced herein by $14,088 in 1978 in accordance with a letter of agreement with the district.

Table B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area					
	San Gorgonio Pass Water Agency (31)	Metropolitan Water District of Southern California (e (32)	Ventura County Flood Control District (33)	Total (34)	City of Yuba City (35)	County of Butte (36)	Plumas County FC&WCD (37)	Total (38)	South Bay Area Future Contractor (39)	Grand Total (40)
1952	963	69,021	371	86,874	0	0	0	0	59	98,712
1953	3,011	217,635	1,186	273,833	0	0	0	0	263	309,844
1954	3,903	279,966	1,492	352,292	0	0	0	0	767	399,845
1955	1,473	111,618	671	140,276	0	0	0	0	969	168,325
1956	2,123	179,340	1,299	225,038	0	0	0	0	9,173	349,672
1957	6,526	516,047	3,365	648,062	0	0	0	0	23,173	1,460,372
1958	11,701	945,682	6,392	1,186,917	0	0	2	2	32,888	2,276,845
1959	15,817	1,364,307	9,893	1,702,903	0	0	14	14	57,919	2,946,201
1960	23,309	1,914,533	12,799	2,379,419	0	0	28	28	123,202	4,633,149
1961	36,154	3,212,117	18,768	3,928,338	0	0	10	10	316,221	8,504,377
1962	40,012	3,543,478	29,068	4,456,905	0	0	32	32	228,201	8,804,371
1963	99,266	11,185,924	86,806	13,638,869	0	0	51	51	528,495	24,346,097
1964	170,010	18,065,460	164,709	22,494,753	0	0	7,791	7,791	590,035	41,262,915
1965	316,082	33,763,578	307,475	41,858,187	0	0	3,139	3,139	332,680	61,775,293
1966	654,195	74,485,021	681,899	91,558,322	0	0	(48)	(48)	783,728	127,295,332
1967	958,408	130,599,410	1,279,076	155,360,062	0	0	47	47	1,479,421	192,195,349
1968	1,314,842	147,502,292	1,360,688	177,782,843	0	0	51,573	51,573	1,254,192	196,797,542
1969	1,726,890	140,096,651	1,085,028	174,739,544	0	0	234,232	234,232	398,182	183,752,850
1970	2,160,121	161,983,087	1,147,608	201,698,391	0	0	16,227	16,227	74,028	206,605,532
1971	1,237,575	133,903,350	738,825	156,388,301	0	0	27,204	27,204	12,456	158,446,087
1972	434,511	43,932,259	66,880	50,872,512	0	0	9	9	13,183	51,855,972
1973	256,719	39,723,721	290,024	44,496,250	0	0	25	25	8,098	45,211,080
1974	264,348	18,897,465	86,367	23,370,296	0	0	45	45	28,569	24,350,046
1975	253,840	16,733,324	83,979	20,509,511	0	0	21	21	8,224	21,285,213
1976	158,851	13,545,699	84,626	16,212,700	0	0	51	51	16,485	17,429,613
1977	96,516	11,769,364	110,830	13,776,860	0	0	28	28	21,182	15,428,986
1978	69,162	15,786,174	174,902	17,775,585	0	0	38	38	28,876	19,031,535
1979	66,968	27,632,781	343,358	30,310,279	0	0	23	23	26,667	31,821,558
1980	338,118	59,503,595	641,585	69,095,656	0	0	26	26	59,168	74,744,271
1981	(25,679)	15,682,600	224,255	15,894,975	0	0	34	34	(6,747)	15,806,235
1982	242,546	30,993,114	316,107	37,541,254	0	0	11	11	16,086	39,860,062
1983	364,264	25,260,985	187,123	33,454,083	0	0	19	19	72,225	38,229,197
1984	263,970	16,433,158	103,161	22,326,383	0	0	26	26	83,253	30,477,376
1985	193,089	10,414,402	56,159	14,417,764	0	0	29	29	16,338	28,806,841
1986	196,131	9,001,008	34,778	13,048,079	0	0	31	31	16,250	41,971,476
1987	160,853	7,894,702	36,141	10,792,948	0	0	32	32	29,063	33,846,654
1988	106,898	7,782,315	57,117	9,721,601	0	0	55	55	50,084	19,715,486
1989	313,357	21,212,595	153,200	27,462,626	0	0	44	44	43,323	36,576,620
1990	326,354	19,570,268	122,383	25,401,398	0	0	63	63	93,467	36,822,115
1991	410,443	23,289,437	132,667	30,305,473	0	0	54	54	149,958	42,744,407
1992	411,751	23,128,484	117,390	29,304,874	0	0	42	42	81,398	37,424,885
1993	744,519	32,542,216	105,693	41,240,555	0	0	30	30	59,325	57,230,141
1994	443,125	17,892,587	50,805	23,105,872	0	0	14	14	34,207	76,755,591
1995	346,790	16,648,336	72,213	21,178,273	0	0	3	3	42,393	145,551,317
1996	634,176	23,993,776	49,261	30,605,655	0	0	0	0	21,384	125,575,348
1997	260,167	14,023,255	74,079	17,626,505	0	0	3	3	35,176	50,862,747
1998	196,289	11,831,669	69,319	14,433,537	0	0	12	12	14,497	24,825,205
1999	249,053	20,816,410	158,945	25,414,039	0	0	0	0	15,106	45,148,429
2000	131,122	14,970,481	135,066	17,959,442	0	0	0	0	35,362	36,871,896
2001	38,499	4,193,708	40,782	5,253,866	0	0	0	0	6,259	10,786,172
2002	2,398	263,002	2,567	330,664	0	0	0	0	2,586	458,139
2003	2,398	263,002	2,567	330,664	0	0	0	0	2,586	457,902
2004	2,121	232,606	2,271	292,620	0	0	0	0	2,287	406,907
2005	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	16,736,048	1,479,797,015	11,124,018	1,804,762,928	0	0	341,070	341,070	7,372,370	2,500,798,132

e) Costs from Table B-10 allocated to MWDSC are reduced herein by $16,425,374 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)

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County WA (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (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	105,102	105,763	366,228	577,093	0	0	0
1964	0	0	0	123,579	171,070	531,568	826,217	6,059	20,500	26,559
1965	0	0	0	156,097	260,156	901,195	1,317,448	11,426	31,741	43,167
1966	18,080	0	18,080	172,559	291,045	1,075,232	1,538,836	20,183	49,661	69,843
1967	41,609	0	41,609	199,604	321,250	1,189,671	1,710,525	37,976	84,159	122,136
1968	121,607	0	121,607	235,970	362,228	1,312,095	1,910,293	51,724	111,313	163,037
1969	165,422	0	165,422	269,575	397,707	1,413,931	2,081,213	55,046	118,838	173,884
1970	169,213	0	169,213	281,881	412,655	1,452,921	2,147,457	56,687	123,018	179,705
1971	171,423	0	171,423	284,559	415,775	1,459,831	2,160,165	57,679	125,911	183,590
1972	172,788	0	172,788	331,837	416,704	1,464,117	2,212,658	58,253	128,392	186,645
1973	173,789	31,399	205,188	332,464	417,354	1,467,359	2,217,177	58,529	129,648	188,177
1974	176,669	32,973	209,642	332,999	417,973	1,469,366	2,220,338	58,720	130,699	189,419
1975	185,122	36,328	221,450	333,800	419,217	1,473,093	2,226,110	58,969	131,932	190,901
1976	189,802	40,877	230,679	334,653	420,022	1,475,203	2,229,878	165,716	330,613	496,329
1977	192,746	45,140	237,886	336,386	421,789	1,480,790	2,238,965	167,430	337,261	504,691
1978	196,017	49,225	245,242	338,742	424,089	1,487,588	2,250,419	172,951	350,753	523,705
1979	199,550	53,391	252,941	342,373	427,453	1,496,503	2,266,329	174,043	356,045	530,088
1980	209,299	67,811	277,110	344,691	429,642	1,502,143	2,276,476	175,212	362,450	537,662
1981	222,778	87,485	310,263	351,547	435,980	1,517,670	2,305,197	180,500	386,269	566,769
1982	234,379	107,012	341,391	349,828	434,459	1,514,324	2,298,611	179,739	379,600	559,339
1983	262,370	151,387	413,757	350,229	434,883	1,515,704	2,300,816	179,972	376,824	556,796
1984	326,333	224,431	550,764	357,284	441,586	1,532,995	2,331,865	181,639	382,678	564,317
1985	456,199	364,602	820,801	365,082	448,771	1,550,933	2,364,786	183,472	388,405	571,877
1986	820,288	693,036	1,513,324	366,090	449,752	1,553,659	2,369,501	184,386	392,664	577,050
1987	1,361,763	1,560,480	2,922,243	367,732	451,371	1,558,172	2,377,275	186,674	408,607	595,281
1988	1,773,045	2,209,860	3,982,905	370,316	453,879	1,565,334	2,389,529	193,242	477,984	671,226
1989	1,892,968	2,435,068	4,328,036	376,340	459,702	1,581,017	2,417,059	201,379	554,915	756,294
1990	1,956,862	2,516,119	4,472,981	381,992	465,066	1,594,588	2,441,646	209,342	618,312	827,654
1991	1,980,120	2,559,404	4,539,524	393,405	476,500	1,626,538	2,496,443	220,889	699,665	920,554
1992	1,985,403	2,564,127	4,549,530	415,278	496,783	1,676,600	2,588,661	236,674	815,198	1,051,871
1993	1,988,463	2,567,454	4,555,917	425,006	505,860	1,700,225	2,631,091	256,815	1,004,264	1,261,079
1994	1,995,038	2,574,362	4,569,400	431,952	512,590	1,718,614	2,663,156	327,782	1,696,009	2,023,791
1995	1,998,897	2,578,871	4,577,768	434,445	515,733	1,731,048	2,681,226	588,156	4,347,459	4,935,615
1996	2,000,568	2,580,470	4,581,038	439,787	521,034	1,745,111	2,705,932	1,360,677	12,980,005	14,340,682
1997	2,001,686	2,581,521	4,583,207	442,534	523,682	1,752,135	2,718,351	1,953,189	21,109,118	23,062,307
1998	2,002,801	2,587,519	4,590,320	447,163	528,108	1,763,865	2,739,136	2,118,179	23,239,829	25,358,008
1999	2,003,839	2,588,818	4,592,657	449,178	530,023	1,768,810	2,748,011	2,166,608	23,865,323	26,031,931
2000	2,004,384	2,589,589	4,593,973	451,697	532,326	1,774,297	2,758,320	2,256,497	24,639,849	26,896,346
2001	2,004,402	2,589,632	4,594,034	457,738	537,849	1,787,459	2,783,046	2,337,408	25,329,817	27,667,225
2002	2,004,420	2,589,676	4,594,096	458,778	538,800	1,789,725	2,787,303	2,352,065	25,439,776	27,791,841
2003	2,004,439	2,589,721	4,594,160	459,228	539,212	1,790,706	2,789,146	2,352,251	25,440,119	27,792,370
2004	2,004,458	2,589,766	4,594,224	459,685	539,629	1,791,700	2,791,014	2,352,440	25,440,467	27,792,906
2005	2,004,475	2,589,806	4,594,281	460,094	540,004	1,792,592	2,792,690	2,352,624	25,440,806	27,793,429
2006	2,004,475	2,589,806	4,594,281	460,094	540,004	1,792,592	2,792,690	2,352,624	25,440,806	27,793,429
2007	2,004,475	2,589,806	4,594,281	460,094	540,004	1,792,592	2,792,690	2,352,624	25,440,806	27,793,429
2008	2,004,475	2,589,806	4,594,281	460,094	540,004	1,792,592	2,792,690	2,352,624	25,440,806	27,793,429
2009	2,004,475	2,589,806	4,594,281	460,094	540,004	1,792,592	2,792,690	2,352,624	25,440,806	27,793,429
2010	2,004,475	2,589,806	4,594,281	460,094	540,004	1,792,592	2,792,690	2,352,624	25,440,806	27,793,429
2011	2,004,475	2,589,806	4,594,281	460,094	540,004	1,792,592	2,792,690	2,352,624	25,440,806	27,793,429
2012	2,004,475	2,589,806	4,594,281	460,094	540,004	1,792,592	2,792,690	2,352,624	25,440,806	27,793,429
2013	2,004,475	2,589,806	4,594,281	349,049	434,240	1,426,365	2,209,654	2,352,624	25,440,806	27,793,429
2014	2,004,475	2,589,806	4,594,281	313,744	368,933	1,261,025	1,943,702	2,346,565	25,420,306	27,766,871
2015	2,004,475	2,589,806	4,594,281	275,769	279,849	891,399	1,447,017	2,341,197	25,409,065	27,750,262
2016	1,986,396	2,589,806	4,576,202	256,686	248,960	717,363	1,223,009	2,332,441	25,391,145	27,723,586
2017	1,962,867	2,589,806	4,552,673	225,554	218,755	602,925	1,047,234	2,314,647	25,356,646	27,671,294
2018	1,882,869	2,589,806	4,472,675	183,969	177,778	480,503	842,250	2,300,899	25,329,493	27,630,393
2019	1,839,054	2,589,806	4,428,860	145,784	142,300	378,669	666,753	2,297,578	25,321,968	27,619,545
2020	1,835,262	2,589,806	4,425,068	131,884	127,352	339,680	598,916	2,295,936	25,317,788	27,613,724
2021	1,833,052	2,589,806	4,422,858	128,877	124,232	332,770	585,879	2,294,945	25,314,895	27,609,839
2022	1,831,688	2,589,806	4,421,494	128,261	123,303	328,484	580,048	2,294,370	25,312,414	27,606,784
2023	1,830,686	2,558,407	4,389,093	127,634	122,653	325,242	575,529	2,294,094	25,311,158	27,605,252
2024	1,827,806	2,556,833	4,384,639	127,100	122,034	323,235	572,369	2,293,904	25,310,107	27,604,010
2025	1,819,354	2,553,478	4,372,832	126,298	120,790	319,508	566,596	2,293,655	25,308,873	27,602,528
2026	1,814,673	2,548,930	4,363,603	125,446	119,985	317,398	562,829	2,186,908	25,110,193	27,297,101
2027	1,811,729	2,544,666	4,356,395	123,712	118,218	311,811	553,741	2,185,193	25,103,545	27,288,738
2028	1,808,458	2,540,581	4,349,039	121,356	115,918	305,013	542,287	2,179,672	25,090,053	27,269,725
2029	1,804,925	2,536,416	4,341,341	117,725	112,554	296,098	526,377	2,178,581	25,084,761	27,263,342
2030	1,795,176	2,521,996	4,317,172	115,408	110,365	290,458	516,231	2,177,412	25,078,356	27,255,767
2031	1,781,698	2,502,321	4,284,019	108,552	104,027	274,932	487,511	2,172,124	25,054,537	27,226,661
2032	1,770,096	2,482,795	4,252,891	110,271	105,549	278,278	494,098	2,172,885	25,061,206	27,234,090
2033	1,742,105	2,438,419	4,180,524	109,870	105,125	276,898	491,893	2,172,651	25,063,982	27,236,633
2034	1,678,142	2,365,375	4,043,517	102,815	98,422	259,607	460,844	2,170,984	25,058,128	27,229,113
2035	1,548,276	2,225,205	3,773,481	95,017	91,236	241,670	427,923	2,169,152	25,052,401	27,221,552
Total	97,922,576	125,829,484	223,752,060	21,990,718	26,318,080	87,840,130	136,148,928	94,785,982	1,007,164,364	1,101,950,345

a) Unadjusted for prior overpayments or underpayments of charges.
b) Determined at the current Project Interest Rate of 4.615 percent per annum.

Table B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area									
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Kern County Water Agency			County of Kings (17)	Oak Flat Water District (18)	Tulare Lake Basin Water Storage District (19)	Total (20)
				Municipal and Industrial (14)	Municipal and Industrial (c (15)	Agricultural (16)				
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	2,727	0	0	0	0	0	0	2,727
1965	0	0	6,034	64,339	9,292	0	0	0	0	79,665
1966	0	0	12,049	120,355	17,087	0	0	0	0	149,491
1967	0	0	26,278	233,450	34,378	0	0	0	0	294,106
1968	79,511	1,749	48,989	336,041	49,006	426,715	8,511	4,694	66,200	1,021,416
1969	79,650	5,248	57,463	392,319	52,578	876,322	9,019	5,103	250,478	1,728,180
1970	87,295	5,248	59,271	423,743	53,965	1,065,871	9,268	5,307	185,359	1,895,327
1971	99,528	5,248	60,376	444,878	54,756	1,415,668	9,410	5,715	197,248	2,292,827
1972	111,204	5,248	60,993	454,591	55,119	2,119,838	9,478	10,952	608,496	3,435,919
1973	122,324	5,248	61,419	458,816	55,293	2,444,911	9,508	6,327	235,357	3,399,203
1974	185,655	5,248	61,939	460,853	55,393	2,737,934	9,526	7,084	390,653	3,914,285
1975	225,494	5,248	62,502	463,168	55,534	3,279,294	9,550	7,299	466,143	4,574,232
1976	171,927	5,248	62,769	465,027	55,724	3,535,048	9,585	8,244	333,468	4,647,040
1977	169,030	5,248	63,412	467,733	56,010	3,873,398	9,629	7,552	318,839	4,970,851
1978	180,707	5,248	65,848	469,592	56,201	4,305,607	9,652	7,960	342,076	5,442,891
1979	214,312	5,248	66,163	472,356	56,537	4,727,743	9,713	8,164	384,990	5,945,226
1980	227,968	5,248	66,452	475,101	56,874	5,159,037	9,781	11,634	387,470	6,399,565
1981	227,968	5,248	68,040	491,508	58,817	5,646,188	10,172	8,776	410,708	6,927,425
1982	227,968	5,248	68,050	489,226	58,755	6,095,795	10,157	9,185	433,405	7,397,789
1983	238,533	5,248	68,387	493,471	59,424	6,607,669	10,291	9,389	51,598	7,544,010
1984	250,765	5,248	69,004	499,102	60,131	6,931,826	10,433	9,797	338,353	8,174,659
1985	262,441	5,248	69,733	506,992	61,292	7,381,433	10,666	10,001	246,149	8,553,955
1986	274,118	5,248	70,021	509,390	61,637	7,510,968	10,734	10,409	525,274	8,977,799
1987	285,794	5,248	70,527	513,063	62,166	8,281,563	10,837	10,613	547,971	9,787,782
1988	297,471	5,248	70,888	515,925	62,576	8,705,531	10,915	11,021	570,668	10,250,243
1989	309,147	5,248	71,773	519,584	63,201	9,011,374	11,065	11,430	593,905	10,596,727
1990	320,824	5,248	73,211	537,956	65,442	9,329,121	11,493	11,634	640,380	10,995,309
1991	320,824	5,248	75,819	566,741	69,987	9,329,121	12,300	11,634	640,380	11,032,054
1992	320,824	5,248	79,015	597,458	74,842	9,329,121	13,279	11,634	640,380	11,071,801
1993	320,824	5,248	80,511	610,353	76,687	9,329,121	13,630	11,634	640,380	11,088,388
1994	320,824	5,248	82,136	619,731	77,967	9,329,121	13,871	11,634	640,380	11,100,912
1995	320,824	5,248	83,425	626,426	78,914	9,329,121	14,053	11,634	640,380	11,110,025
1996	273,579	5,248	87,397	635,585	80,246	9,014,313	14,291	11,634	640,380	10,762,673
1997	273,579	5,248	90,262	639,377	80,731	8,949,320	14,370	11,634	640,380	10,704,901
1998	273,589	5,248	93,039	652,074	82,871	8,530,882	14,794	11,634	640,405	10,304,536
1999	273,589	5,248	94,513	660,695	84,206	8,530,882	15,063	11,634	640,405	10,316,235
2000	272,910	5,245	96,231	677,869	87,058	7,835,612	15,636	11,631	640,221	9,642,413
2001	272,910	5,245	98,271	699,311	90,517	7,835,612	16,339	11,631	640,221	9,670,057
2002	272,910	5,245	99,658	713,667	92,846	7,835,612	16,812	11,631	640,221	9,688,602
2003	272,910	5,245	99,747	714,010	92,898	7,835,612	16,823	11,631	640,221	9,689,097
2004	272,910	5,245	99,837	714,358	92,950	7,835,612	16,833	11,631	640,221	9,689,597
2005	272,910	5,245	99,925	714,670	92,997	7,835,612	16,843	11,631	640,221	9,690,054
2006	272,910	5,245	99,925	714,670	92,997	7,835,612	16,843	11,631	640,221	9,690,054
2007	272,910	5,245	99,925	714,670	92,997	7,835,612	16,843	11,631	640,221	9,690,054
2008	272,910	5,245	99,925	714,670	92,997	7,835,612	16,843	11,631	640,221	9,690,054
2009	272,910	5,245	99,925	714,670	92,997	7,835,612	16,843	11,631	640,221	9,690,054
2010	272,910	5,245	99,925	714,670	92,997	7,835,612	16,843	11,631	640,221	9,690,054
2011	272,910	5,245	99,925	714,670	92,997	7,835,612	16,843	11,631	640,221	9,690,054
2012	272,910	5,245	99,925	714,670	92,997	7,835,612	16,843	11,631	640,221	9,690,054
2013	272,910	5,245	99,925	714,670	92,997	7,835,612	16,843	11,631	640,221	9,690,054
2014	272,910	5,245	97,198	714,670	92,997	7,835,612	16,843	11,631	640,221	9,687,327
2015	272,910	5,245	93,891	650,446	83,704	7,835,612	16,843	11,631	640,221	9,610,503
2016	272,910	5,245	87,877	594,538	75,909	7,835,612	16,843	11,631	640,221	9,540,786
2017	272,910	5,245	73,649	481,627	58,619	7,835,612	16,843	11,631	640,221	9,396,357
2018	272,910	5,245	50,940	379,317	43,991	7,835,612	8,334	11,631	640,221	9,248,201
2019	272,910	5,245	42,466	323,448	40,418	7,835,612	7,826	11,631	640,221	9,179,777
2020	272,910	5,245	40,658	292,365	39,031	7,835,612	7,576	11,631	640,221	9,145,249
2021	272,910	5,245	39,553	271,508	38,240	7,835,612	7,435	11,631	640,221	9,122,355
2022	272,910	5,245	38,936	261,932	37,878	7,835,612	7,367	11,631	640,221	9,111,732
2023	272,910	5,245	38,510	257,766	37,704	7,835,612	7,337	11,631	640,221	9,106,936
2024	272,910	5,245	37,990	255,754	37,603	7,835,612	7,319	11,631	640,221	9,104,285
2025	272,910	5,245	37,428	253,465	37,462	7,835,612	7,295	11,631	640,221	9,101,269
2026	272,910	5,245	37,160	251,620	37,273	7,835,612	7,260	11,631	640,221	9,098,932
2027	272,910	5,245	36,517	248,929	36,987	7,835,612	7,216	11,631	640,221	9,095,268
2028	272,910	5,245	34,081	247,081	36,795	7,835,612	7,193	11,631	640,221	9,090,769
2029	272,910	5,245	33,766	244,331	36,460	7,835,612	7,132	11,631	640,221	9,087,308
2030	272,910	5,245	33,478	241,598	36,123	7,835,612	7,064	11,631	640,221	9,083,882
2031	272,910	5,245	31,890	225,280	34,180	7,835,612	6,673	11,631	640,221	9,063,642
2032	272,910	5,245	31,879	227,528	34,242	7,835,612	6,688	11,631	640,221	9,065,956
2033	272,910	5,245	31,543	223,296	33,572	7,835,612	6,554	11,631	640,221	9,060,584
2034	272,910	5,245	30,925	217,693	32,865	7,835,612	6,412	11,631	640,221	9,053,514
2035	272,910	5,245	30,196	209,818	31,705	7,835,612	6,180	11,631	640,221	9,043,518
Total	17,172,850	353,257	4,714,035	33,912,274	4,360,639	475,221,888	785,307	721,712	37,336,614	574,578,576

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

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (21)	Castaic Lake Water Agency (22)	Coachella Valley Water District (23)	Crestline-Lake Arrowhead Water Agency (24)	Desert Water Agency (25)	Littlerock Creek Irrigation District (26)	Mojave Water Agency (27)	Palmdale Water District (28)	San Bernardino Valley Municipal Water District (29)	San Gabriel Valley Municipal Water District (30)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,350	0	0	0	0	0	0	0	51,775	0
1964	62,920	27,471	14,440	4,374	37,191	1,144	28,462	8,212	82,882	35,018
1965	118,700	53,051	25,116	7,200	40,804	2,084	50,360	15,235	135,181	35,373
1966	215,956	101,346	44,767	12,489	73,212	3,757	90,473	27,701	232,692	61,514
1967	417,814	210,983	86,188	23,491	141,524	7,291	175,317	54,067	433,698	115,666
1968	671,471	419,989	141,105	38,582	232,093	11,791	286,547	87,363	730,432	194,682
1969	973,444	623,817	209,953	57,347	345,637	17,263	426,104	127,321	1,137,320	302,890
1970	1,270,230	780,776	296,106	84,863	487,724	23,446	592,090	171,434	1,692,806	444,060
1971	1,526,762	947,846	400,636	120,305	660,119	28,868	789,467	208,987	2,395,985	620,270
1972	1,658,139	1,057,278	455,252	137,563	750,193	31,332	895,854	226,677	2,810,734	721,555
1973	1,707,756	1,071,716	472,162	142,256	778,081	32,307	929,930	233,526	2,947,904	757,130
1974	1,725,820	1,118,319	480,245	146,447	791,413	32,629	942,066	235,875	3,037,643	777,701
1975	1,748,831	1,132,636	493,455	150,225	813,199	33,044	968,492	238,890	3,120,082	799,411
1976	1,761,749	1,145,200	503,324	152,917	829,476	33,296	988,478	240,623	3,198,254	820,203
1977	1,773,856	1,158,210	510,295	154,815	840,971	33,513	1,002,637	242,203	3,247,301	833,246
1978	1,784,027	1,177,144	514,953	156,133	848,653	33,704	1,011,996	243,571	3,277,448	841,174
1979	1,799,426	1,201,114	518,958	157,266	855,259	33,971	1,020,040	245,541	3,299,318	846,872
1980	1,817,702	1,248,974	523,136	158,379	862,149	34,275	1,028,565	247,810	3,319,924	852,407
1981	1,912,967	1,339,564	544,749	164,153	897,794	35,930	1,072,638	260,098	3,424,036	880,369
1982	1,904,928	1,370,696	542,361	163,712	893,856	35,800	1,067,429	259,106	3,416,907	878,205
1983	1,984,915	1,414,629	557,710	167,798	919,168	37,147	1,098,920	269,203	3,490,492	898,306
1984	2,090,911	1,441,202	578,081	173,804	952,765	38,929	1,140,223	282,562	3,600,822	928,490
1985	2,168,586	1,456,279	593,377	178,204	977,991	40,324	1,171,359	292,208	3,680,755	950,373
1986	2,214,603	1,464,373	604,736	181,469	996,724	41,006	1,194,453	297,748	3,739,316	966,379
1987	2,260,690	1,469,747	617,227	184,742	1,017,325	41,553	1,220,143	303,072	3,799,156	982,719
1988	2,278,519	1,475,191	627,393	187,420	1,034,089	41,862	1,241,003	305,310	3,848,625	996,185
1989	2,292,607	1,484,221	632,370	189,009	1,042,297	42,078	1,250,874	306,888	3,882,162	1,005,141
1990	2,348,014	1,506,887	650,749	194,486	1,072,609	43,005	1,287,881	313,670	3,980,430	1,031,688
1991	2,381,807	1,526,084	669,939	200,122	1,104,256	43,392	1,326,694	317,164	4,083,144	1,059,532
1992	2,426,092	1,547,363	691,317	207,151	1,139,514	44,036	1,369,405	322,123	4,212,692	1,094,830
1993	2,459,956	1,566,444	706,764	214,756	1,164,989	44,548	1,397,913	326,232	4,343,293	1,130,551
1994	2,494,032	1,584,279	719,268	224,897	1,185,611	45,096	1,417,322	330,206	4,581,012	1,195,189
1995	2,519,292	1,593,223	726,613	230,253	1,197,724	45,488	1,429,281	333,082	4,723,596	1,233,890
1996	2,544,414	1,609,242	733,948	234,713	1,209,821	45,894	1,442,012	336,061	4,836,393	1,264,463
1997	2,560,928	1,620,634	740,595	237,382	1,220,782	46,163	1,454,791	338,033	5,044,194	1,320,213
1998	2,573,500	1,629,835	744,276	238,302	1,226,852	46,375	1,925,902	339,574	5,120,347	1,340,557
1999	2,588,126	1,641,855	748,094	240,708	1,233,149	46,624	1,936,782	341,418	5,185,916	1,358,344
2000	2,599,726	2,701,364	758,091	245,114	1,249,643	46,870	1,956,523	342,947	6,415,210	1,377,279
2001	2,625,012	2,740,641	767,797	247,578	1,265,650	47,299	1,982,676	346,050	7,376,674	1,389,542
2002	2,641,148	2,754,666	770,703	248,320	1,270,442	47,569	1,992,740	348,076	7,389,939	1,393,191
2003	2,642,167	2,755,520	770,887	248,367	1,270,746	47,586	1,993,432	348,204	7,390,763	1,393,417
2004	2,643,199	2,756,385	771,074	248,414	1,271,054	47,604	1,994,134	348,334	7,391,599	1,393,647
2005	2,644,126	2,757,171	771,241	248,456	1,271,330	47,619	1,994,777	348,450	7,392,348	1,393,853
2006	2,644,126	2,757,171	771,241	248,456	1,271,330	47,619	1,994,777	348,450	7,392,348	1,393,853
2007	2,644,126	2,757,171	771,241	248,456	1,271,330	47,619	1,994,777	348,450	7,392,348	1,393,853
2008	2,644,126	2,757,171	771,241	248,456	1,271,330	47,619	1,994,777	348,450	7,392,348	1,393,853
2009	2,644,126	2,757,171	771,241	248,456	1,271,330	47,619	1,994,777	348,450	7,392,348	1,393,853
2010	2,644,126	2,757,171	771,241	248,456	1,271,330	47,619	1,994,777	348,450	7,392,348	1,393,853
2011	2,644,126	2,757,171	771,241	248,456	1,271,330	47,619	1,994,777	348,450	7,392,348	1,393,853
2012	2,644,126	2,757,171	771,241	248,456	1,271,330	47,619	1,994,777	348,450	7,392,348	1,393,853
2013	2,611,066	2,757,171	771,241	248,456	1,258,039	47,619	1,994,777	348,450	7,340,807	1,380,804
2014	2,581,640	2,707,344	756,882	244,102	1,248,264	46,483	1,954,649	340,294	7,309,817	1,372,649
2015	2,526,231	2,661,588	746,273	241,293	1,230,767	45,549	1,920,776	333,319	7,257,817	1,358,657
2016	2,429,628	2,575,712	726,740	236,034	1,198,552	43,887	1,858,430	320,934	7,160,832	1,332,661
2017	2,229,270	2,387,095	685,589	225,100	1,130,687	40,378	1,724,558	294,757	6,961,037	1,278,843
2018	1,978,702	2,053,750	631,231	210,151	1,041,038	35,929	1,539,379	261,849	6,666,800	1,200,512
2019	1,680,710	1,721,369	563,102	191,568	928,680	30,524	1,346,630	222,391	6,263,127	1,093,189
2020	1,388,564	1,463,446	477,786	164,263	787,975	24,419	1,137,737	178,861	5,711,390	953,049
2021	1,136,168	1,199,456	374,004	129,010	616,812	19,066	904,789	141,827	5,011,551	777,756
2022	1,007,180	1,034,748	319,819	111,862	527,450	16,642	779,249	124,438	4,598,732	677,002
2023	958,453	1,023,875	303,070	107,209	499,827	15,682	737,581	117,701	4,462,282	641,625
2024	940,718	963,861	295,047	103,033	486,593	15,366	721,814	115,393	4,372,809	621,126
2025	918,132	944,692	281,913	99,275	464,933	14,958	691,102	112,431	4,290,713	599,511
2026	905,432	925,582	272,083	96,593	448,721	14,709	668,898	110,726	4,212,717	578,768
2027	893,478	905,484	265,140	94,702	437,272	14,495	652,041	109,165	4,163,793	565,758
2028	883,404	876,753	260,500	93,388	429,619	14,305	637,194	107,810	4,133,726	557,852
2029	868,183	837,394	256,527	92,263	423,067	14,041	626,999	105,862	4,111,999	552,194
2030	850,096	759,720	252,383	91,159	416,233	13,740	616,339	103,616	4,091,545	546,700
2031	756,283	610,163	231,032	85,452	381,021	12,110	557,654	91,511	3,988,608	519,061
2032	763,876	561,308	233,340	85,872	384,826	12,233	566,450	92,447	3,995,378	521,126
2033	684,503	489,243	218,103	81,814	359,698	10,896	530,397	82,427	3,922,291	501,161
2034	579,118	445,081	197,842	75,836	326,284	9,123	483,375	69,145	3,812,456	471,114
2035	501,678	420,109	182,588	71,447	301,127	7,732	448,608	59,528	3,732,712	449,283
Total	129,449,613	108,308,506	37,430,373	11,923,056	61,700,674	2,336,731	85,649,050	17,094,887	326,820,585	66,222,897

Table B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (39)	Grand Total (40)
	San Gorgonio Pass Water Agency (31)	Metropolitan Water District of Southern California (32)	Ventura County Flood Control District (33)	Total (34)	City of Yuba City (35)	County of Butte (36)	Plumas County FC&WCD (37)	Total (38)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	691,434	0	776,559	0	0	0	0	43,160	1,396,812
1964	21,755	1,261,586	9,385	1,594,840	0	0	0	0	70,097	2,520,440
1965	21,884	2,182,391	17,781	2,705,160	0	0	405	405	100,172	4,246,017
1966	37,995	3,903,336	33,453	4,838,691	0	0	565	565	117,128	6,732,634
1967	71,340	7,699,872	68,210	9,505,461	0	0	563	563	157,075	11,831,475
1968	120,190	14,356,584	133,405	17,424,234	0	0	565	565	232,482	20,873,634
1969	187,209	21,874,844	202,760	26,485,909	0	0	3,194	3,194	296,409	30,934,211
1970	275,229	29,015,635	258,064	35,392,463	0	0	15,133	15,133	316,704	40,116,002
1971	385,331	37,271,988	316,558	45,673,122	0	0	15,960	15,960	320,478	50,817,565
1972	448,411	44,097,103	354,216	53,644,307	0	0	17,346	17,346	321,113	59,990,776
1973	470,558	46,336,351	357,625	56,237,302	0	0	17,347	17,347	321,784	62,586,178
1974	483,643	48,361,087	372,408	58,505,296	0	0	17,348	17,348	322,197	65,378,525
1975	497,117	49,324,300	376,810	59,696,492	0	0	17,350	17,350	323,653	67,250,188
1976	510,056	50,177,205	381,090	60,741,871	0	0	17,351	17,351	324,073	68,687,221
1977	518,152	50,867,636	385,404	61,568,239	0	0	17,354	17,354	324,913	69,862,899
1978	523,072	51,467,526	391,053	62,270,454	0	0	17,355	17,355	325,992	71,076,058
1979	526,597	52,272,154	399,968	63,176,484	0	0	17,357	17,357	327,464	72,515,889
1980	530,010	53,680,610	417,469	64,721,410	0	0	17,358	17,358	328,824	74,558,405
1981	547,244	56,713,535	450,171	68,243,248	0	0	17,360	17,360	331,839	78,702,101
1982	545,936	57,512,885	461,601	69,053,422	0	0	17,362	17,362	331,495	79,999,409
1983	558,298	59,092,618	477,713	70,966,917	0	0	17,362	17,362	332,315	82,131,973
1984	576,865	60,380,182	487,251	72,672,087	0	0	17,363	17,363	335,997	84,647,052
1985	590,320	61,217,788	492,509	73,810,073	0	0	17,364	17,364	340,240	86,479,096
1986	600,161	61,748,615	495,372	74,544,955	0	0	17,366	17,366	341,073	88,341,068
1987	610,213	62,209,892	497,154	75,213,633	0	0	17,367	17,367	341,906	91,255,487
1988	618,503	62,616,786	499,017	75,769,903	0	0	17,369	17,369	343,404	93,424,579
1989	624,046	63,020,300	501,978	76,273,971	0	0	17,372	17,372	346,000	94,735,459
1990	640,396	64,127,139	509,972	77,706,926	0	0	17,374	17,374	348,261	96,810,151
1991	657,538	65,155,093	516,400	79,041,165	0	0	17,378	17,378	353,170	98,400,288
1992	679,249	66,386,994	523,418	80,644,184	0	0	17,380	17,380	361,103	100,284,530
1993	701,190	67,619,438	529,673	82,205,747	0	0	17,383	17,383	365,440	102,125,045
1994	741,173	69,367,046	535,349	84,420,480	0	0	17,384	17,384	368,626	105,163,749
1995	765,165	70,335,838	538,100	85,671,545	0	0	17,385	17,385	370,478	109,364,042
1996	784,105	71,245,091	542,044	86,828,201	0	0	17,385	17,385	372,793	119,608,704
1997	819,059	72,567,536	544,759	88,515,069	0	0	17,385	17,385	373,972	129,975,192
1998	831,821	73,159,526	547,042	89,723,909	0	0	17,385	17,385	375,930	133,109,224
1999	842,851	73,824,048	550,933	90,538,848	0	0	17,386	17,386	376,745	134,621,813
2000	2,204,506	74,414,694	552,771	94,864,738	0	0	17,386	17,386	377,601	139,150,777
2001	3,295,133	75,268,018	560,438	97,912,509	0	0	17,386	17,386	379,634	143,023,890
2002	3,297,369	75,511,537	562,805	98,228,506	0	0	17,386	17,386	379,998	143,487,732
2003	3,297,508	75,526,774	562,954	98,248,326	0	0	17,386	17,386	380,150	143,510,635
2004	3,297,649	75,542,219	563,105	98,268,418	0	0	17,386	17,386	380,305	143,533,850
2005	3,297,776	75,556,077	563,240	98,286,465	0	0	17,386	17,386	380,444	143,554,749
2006	3,297,776	75,556,077	563,240	98,286,465	0	0	17,386	17,386	380,444	143,554,749
2007	3,297,776	75,556,077	563,240	98,286,465	0	0	17,386	17,386	380,444	143,554,749
2008	3,297,776	75,556,077	563,240	98,286,465	0	0	17,386	17,386	380,444	143,554,749
2009	3,297,776	75,556,077	563,240	98,286,465	0	0	17,386	17,386	380,444	143,554,749
2010	3,297,776	75,556,077	563,240	98,286,465	0	0	17,386	17,386	380,444	143,554,749
2011	3,297,776	75,556,077	563,240	98,286,465	0	0	17,386	17,386	380,444	143,554,749
2012	3,297,776	75,556,077	563,240	98,286,465	0	0	17,386	17,386	380,444	143,554,749
2013	3,289,656	74,870,072	563,240	97,481,399	0	0	17,386	17,386	337,284	142,123,487
2014	3,284,616	74,302,901	553,947	96,703,589	0	0	17,386	17,386	310,346	141,023,501
2015	3,276,001	73,388,943	545,624	95,532,839	0	0	16,981	16,981	280,272	139,232,155
2016	3,259,979	71,680,362	530,083	93,353,835	0	0	16,821	16,821	263,315	136,697,554
2017	3,226,838	67,914,499	495,659	88,594,311	0	0	16,823	16,823	223,369	131,502,060
2018	3,178,409	61,346,517	431,500	80,575,768	0	0	16,821	16,821	147,962	122,934,069
2019	3,111,933	53,936,834	363,401	71,453,459	0	0	14,192	14,192	84,035	113,446,621
2020	3,024,545	46,888,694	309,094	62,509,824	0	0	2,253	2,253	63,740	104,358,774
2021	2,915,006	38,727,454	251,661	52,204,561	0	0	1,426	1,426	59,967	94,006,885
2022	2,852,252	31,960,103	214,655	44,224,133	0	0	40	40	59,332	86,003,563
2023	2,830,226	29,718,239	211,157	41,626,928	0	0	39	39	58,660	83,362,437
2024	2,817,186	27,706,694	196,536	39,356,177	0	0	38	38	58,247	81,079,765
2025	2,803,770	26,748,641	192,180	38,162,252	0	0	36	36	56,791	79,862,304
2026	2,790,861	25,902,062	187,973	37,115,126	0	0	35	35	56,372	78,493,997
2027	2,782,785	25,217,654	183,734	36,285,502	0	0	32	32	55,531	77,635,207
2028	2,777,879	24,626,763	178,202	35,577,396	0	0	31	31	54,452	76,883,699
2029	2,774,378	23,836,588	169,476	34,668,972	0	0	29	29	52,980	75,940,349
2030	2,770,990	22,456,906	152,359	33,121,787	0	0	28	28	51,621	74,346,488
2031	2,753,954	19,479,872	120,339	29,587,061	0	0	26	26	48,605	70,697,524
2032	2,755,202	18,697,937	109,174	28,779,170	0	0	24	24	48,949	69,875,178
2033	2,742,924	17,147,406	93,427	26,864,291	0	0	24	24	48,129	67,882,078
2034	2,724,441	15,877,089	84,090	25,154,995	0	0	23	23	44,447	65,986,452
2035	2,711,018	15,046,704	78,917	24,011,452	0	0	22	22	40,204	64,518,152
Total	127,591,915	3,671,332,784	27,852,622	4,673,561,607	0	0	869,195	869,195	18,730,355	6,729,591,066

Table B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (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	116,435	179,547
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	74,012	136,543	210,555
1972	37,895	0	37,895	122,407	117,483	334,366	574,256	79,196	146,108	225,304
1973	32,993	0	32,993	122,738	116,785	325,727	565,250	75,716	139,688	215,404
1974	46,498	0	46,498	154,434	146,929	403,081	704,444	76,533	141,194	217,727
1975	37,707	0	37,707	189,176	182,087	513,823	885,086	92,606	170,849	263,455
1976	60,786	0	60,786	203,063	193,436	524,814	921,313	94,935	175,148	270,083
1977	78,400	0	78,400	179,870	169,065	500,102	849,037	102,949	189,928	292,877
1978	56,318	0	56,318	239,300	228,853	647,828	1,115,981	104,065	191,991	296,056
1979	73,852	0	73,852	236,987	232,104	666,748	1,135,839	100,763	185,895	286,658
1980	81,769	0	81,769	389,575	372,185	1,010,831	1,772,591	124,634	229,935	354,569
1981	101,340	0	101,340	317,416	302,279	834,274	1,453,969	138,526	255,563	394,089
1982	191,987	0	191,987	386,733	369,626	1,098,826	1,855,185	140,355	258,935	399,290
1983	80,215	0	80,215	438,535	428,970	1,269,369	2,136,874	169,246	312,240	481,486
1984	106,470	0	106,470	592,064	566,460	1,819,639	2,978,163	199,838	368,681	568,519
1985	215,344	0	215,344	677,549	657,843	1,845,823	3,181,215	244,180	450,486	694,666
1986	203,704	0	203,704	613,276	583,080	1,784,066	2,980,422	231,235	426,598	657,833
1987	295,505	0	295,505	687,630	652,468	2,000,819	3,340,917	228,994	461,051	690,045
1988	312,792	(186)	312,606	677,024	655,445	1,910,595	3,243,064	257,220	558,064	815,284
1989	403,501	688,572	1,092,073	717,229	712,752	1,898,195	3,328,176	243,365	665,842	909,207
1990	657,048	672,899	1,329,947	780,665	778,546	2,125,750	3,684,961	309,847	676,331	986,178
1991	726,577	860,756	1,587,333	543,027	524,579	1,520,111	2,587,717	302,336	673,793	976,129
1992	483,596	712,378	1,195,974	796,157	855,158	2,253,755	3,905,070	346,277	736,580	1,082,857
1993	524,638	708,735	1,233,373	1,281,704	1,262,311	3,340,809	5,884,824	386,349	734,672	1,121,021
1994	572,967	657,339	1,230,306	1,367,166	1,311,377	3,557,017	6,235,560	480,713	887,717	1,368,430
1995	541,539	662,872	1,204,411	1,230,751	1,185,799	3,213,089	5,629,639	477,564	880,651	1,358,215
1996	599,423	1,004,976	1,604,399	1,176,358	1,116,696	2,986,472	5,279,526	646,317	1,191,937	1,838,254
1997	562,446	746,167	1,308,613	1,033,506	971,970	2,671,643	4,677,119	1,068,556	1,970,945	3,039,501
1998	501,964	717,721	1,219,685	1,087,473	1,183,503	3,413,213	5,684,189	1,337,725	2,596,960	3,934,685
1999	836,955	1,457,137	2,294,092	1,436,711	1,807,787	4,872,530	8,117,028	1,515,613	2,770,025	4,285,638
2000	830,697	1,463,872	2,294,569	1,513,303	1,466,024	4,011,737	6,991,064	1,581,495	2,890,482	4,471,977
2001	767,920	1,325,360	2,093,280	1,518,726	1,472,880	4,042,594	7,034,200	1,336,916	2,439,441	3,776,357
2002	779,994	1,351,819	2,131,813	1,477,043	1,436,152	3,964,966	6,878,161	1,282,208	2,338,310	3,620,518
2003	769,386	1,326,585	2,095,971	1,447,610	1,409,284	3,901,017	6,757,911	1,266,673	2,339,774	3,606,447
2004	751,016	1,294,001	2,045,017	1,409,880	1,372,582	3,798,958	6,581,420	1,238,105	2,287,087	3,525,192
2005	750,770	1,293,440	2,044,210	1,409,670	1,372,389	3,798,484	6,580,543	1,237,744	2,286,303	3,524,047
2006	750,232	1,292,223	2,042,455	1,409,219	1,371,970	3,797,454	6,578,643	1,236,960	2,284,604	3,521,564
2007	750,348	1,292,486	2,042,834	1,409,316	1,372,060	3,797,676	6,579,052	1,237,132	2,284,971	3,522,103
2008	750,423	1,292,658	2,043,081	1,409,380	1,372,119	3,797,820	6,579,319	1,237,240	2,285,208	3,522,448
2009	750,504	1,292,839	2,043,343	1,409,447	1,372,182	3,797,973	6,579,602	1,237,357	2,285,463	3,522,820
2010	750,296	1,292,368	2,042,664	1,409,271	1,372,019	3,797,576	6,578,866	1,237,056	2,284,806	3,521,862
2011	753,238	1,297,747	2,050,985	1,414,892	1,377,470	3,812,630	6,604,992	1,241,563	2,293,289	3,534,852
2012	753,302	1,297,889	2,051,191	1,414,945	1,377,520	3,812,750	6,605,215	1,241,654	2,293,487	3,535,141
2013	753,731	1,298,854	2,052,585	1,415,305	1,377,852	3,813,566	6,606,723	1,242,276	2,294,838	3,537,114
2014	754,395	1,300,356	2,054,751	1,415,863	1,378,369	3,814,839	6,609,071	1,243,241	2,296,933	3,540,174
2015	754,374	1,300,311	2,054,685	1,415,846	1,378,354	3,814,799	6,608,999	1,243,212	2,296,873	3,540,085
2016	754,212	1,299,945	2,054,157	1,415,709	1,378,227	3,814,490	6,608,426	1,242,975	2,296,359	3,539,334
2017	754,319	1,300,183	2,054,502	1,415,799	1,378,309	3,814,690	6,608,798	1,243,128	2,296,691	3,539,819
2018	754,821	1,301,318	2,056,139	1,416,220	1,378,700	3,815,650	6,610,570	1,243,857	2,298,275	3,542,132
2019	754,518	1,300,633	2,055,151	1,415,967	1,378,465	3,815,068	6,609,500	1,243,416	2,297,319	3,540,735
2020	754,397	1,300,361	2,054,758	1,415,865	1,378,370	3,814,841	6,609,076	1,243,243	2,296,938	3,540,181
2021	754,178	1,299,865	2,054,043	1,415,679	1,378,200	3,814,419	6,608,298	1,242,922	2,296,245	3,539,167
2022	754,769	1,301,200	2,055,969	1,416,176	1,378,659	3,815,547	6,610,382	1,243,779	2,298,108	3,541,887
2023	754,172	1,299,852	2,054,024	1,415,674	1,378,196	3,814,407	6,608,277	1,242,916	2,296,225	3,539,141
2024	754,469	1,300,523	2,054,992	1,415,924	1,378,427	3,814,976	6,609,327	1,243,345	2,297,160	3,540,505
2025	754,391	1,300,347	2,054,738	1,415,858	1,378,364	3,814,827	6,609,049	1,243,230	2,296,916	3,540,146
2026	754,513	1,300,619	2,055,132	1,415,959	1,378,460	3,815,057	6,609,476	1,243,408	2,297,300	3,540,708
2027	754,335	1,300,217	2,054,552	1,415,811	1,378,321	3,814,716	6,608,848	1,243,149	2,296,738	3,539,887
2028	754,635	1,300,893	2,055,528	1,416,061	1,378,553	3,815,290	6,609,904	1,243,585	2,297,681	3,541,266
2029	754,297	1,300,133	2,054,430	1,415,779	1,378,291	3,814,645	6,608,715	1,243,093	2,296,618	3,539,711
2030	754,139	1,299,776	2,053,915	1,415,646	1,378,170	3,814,344	6,608,160	1,242,866	2,296,121	3,538,987
2031	754,725	1,301,097	2,055,822	1,416,137	1,378,624	3,815,464	6,610,225	1,243,714	2,297,966	3,541,680
2032	754,668	1,300,970	2,055,638	1,416,090	1,378,580	3,815,355	6,610,025	1,243,634	2,297,790	3,541,424
2033	754,073	1,299,625	2,053,698	1,415,590	1,378,116	3,814,218	6,607,924	1,242,768	2,295,908	3,538,676
2034	754,445	1,300,472	2,054,917	1,415,904	1,378,408	3,814,933	6,609,245	1,243,313	2,297,089	3,540,402
2035	754,645	1,300,918	2,055,563	1,416,072	1,378,563	3,815,311	6,609,946	1,243,601	2,297,715	3,541,316
Total	35,905,032	55,911,121	91,816,153	69,784,765	68,380,050	189,462,936	327,627,751	55,005,539	102,282,452	157,287,991

Table B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (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	45,480	2,237	30,158	80,554	1,197,134	2,286	2,086	90,772	1,450,707
1970	46,969	2,292	35,450	96,672	1,381,494	2,345	2,158	93,407	1,660,787
1971	47,997	2,315	35,365	106,653	1,643,154	2,366	2,288	94,872	1,935,010
1972	49,867	2,414	37,844	122,310	1,729,156	2,470	2,254	98,776	2,045,091
1973	50,006	2,386	36,180	125,551	1,719,853	2,439	2,310	98,331	2,037,056
1974	52,817	2,557	36,570	135,656	1,823,051	2,615	2,529	104,610	2,160,405
1975	66,963	3,242	44,253	162,734	2,235,223	3,317	3,191	132,663	2,651,586
1976	66,503	3,327	45,365	159,299	2,215,989	3,404	2,919	133,942	2,630,748
1977	75,597	3,810	49,191	189,659	2,522,310	3,900	3,708	152,841	3,001,016
1978	70,684	3,504	49,729	174,888	2,427,094	3,582	3,644	141,667	2,874,792
1979	68,875	3,437	48,149	173,675	2,378,372	3,514	3,492	138,487	2,818,001
1980	95,895	4,723	59,556	235,740	3,146,599	4,828	4,777	191,573	3,743,691
1981	118,449	5,965	66,193	266,367	3,440,750	6,098	5,188	239,321	4,148,331
1982	134,082	6,710	67,068	311,892	3,849,069	6,863	6,381	270,057	4,652,122
1983	184,902	9,243	80,873	426,488	5,030,109	9,451	8,495	372,182	6,121,743
1984	191,793	9,525	95,492	468,227	5,600,827	9,740	8,696	384,790	6,769,090
1985	209,426	10,369	116,680	507,195	6,251,915	10,604	9,639	419,546	7,535,374
1986	207,029	10,300	110,493	530,829	6,373,086	10,536	10,342	415,777	7,668,392
1987	204,997	10,258	109,425	533,482	6,378,711	10,494	10,517	412,875	7,670,759
1988	203,770	10,228	122,910	516,464	6,389,178	10,459	10,343	410,998	7,674,350
1989	224,169	11,274	116,290	564,503	6,751,266	11,531	11,108	452,648	8,142,789
1990	270,685	13,645	148,061	662,784	8,101,041	13,955	13,184	547,192	9,770,547
1991	275,714	13,852	144,470	663,600	8,118,030	14,167	13,215	556,405	9,799,453
1992	317,924	16,028	162,492	764,333	9,116,729	16,395	18,211	642,740	11,054,852
1993	360,150	18,003	184,617	832,545	10,380,317	18,413	19,570	724,954	12,538,569
1994	308,753	15,469	224,108	737,649	9,780,783	15,822	16,416	622,196	11,721,196
1995	392,021	19,741	220,725	894,586	11,141,665	20,191	21,108	792,048	13,502,085
1996	389,152	19,819	300,477	894,001	12,120,765	20,269	21,512	790,761	14,556,756
1997	392,614	19,968	189,340	935,338	10,932,227	20,423	19,207	798,720	13,307,837
1998	493,709	24,775	261,745	1,120,791	12,689,482	25,341	22,252	1,004,115	15,642,210
1999	465,143	23,194	299,631	1,192,067	13,639,394	23,723	26,336	935,137	16,604,625
2000	478,667	23,916	286,102	1,220,475	13,118,341	24,464	26,503	963,256	16,141,724
2001	460,449	22,929	267,481	1,169,974	12,359,734	23,455	24,979	925,073	15,254,074
2002	421,054	20,862	270,726	1,100,779	11,647,066	21,340	23,838	843,778	14,349,443
2003	421,380	20,879	270,873	1,014,268	11,655,228	21,356	23,847	844,428	14,272,259
2004	409,113	20,266	263,842	986,954	11,337,794	20,732	23,307	819,775	13,881,783
2005	408,940	20,258	263,765	986,555	11,333,430	20,722	23,302	819,426	13,876,398
2006	408,559	20,239	263,598	985,693	11,323,947	20,704	23,291	818,674	13,864,705
2007	408,642	20,243	263,634	985,880	11,325,991	20,707	23,293	818,836	13,867,226
2008	408,696	20,247	263,658	985,997	11,327,331	20,710	23,294	818,942	13,868,875
2009	408,753	20,249	263,682	986,127	11,328,742	20,713	23,296	819,055	13,870,617
2010	408,605	20,242	263,618	985,793	11,325,068	20,707	23,292	818,763	13,866,088
2011	410,502	20,335	264,700	990,097	11,374,688	20,802	23,377	822,564	13,927,065
2012	410,547	20,337	264,719	990,196	11,375,804	20,804	23,378	822,651	13,928,436
2013	410,845	20,353	264,853	990,882	11,383,323	20,819	23,386	823,250	13,937,711
2014	411,314	20,375	265,059	991,949	11,395,025	20,844	23,400	824,183	13,952,149
2015	411,300	20,375	265,054	991,916	11,394,671	20,843	23,400	824,156	13,951,715
2016	411,185	20,369	265,005	991,655	11,391,811	20,836	23,396	823,926	13,948,183
2017	411,260	20,373	265,037	991,826	11,393,669	20,841	23,398	824,074	13,950,478
2018	411,613	20,391	265,194	992,632	11,402,502	20,857	23,409	824,778	13,961,376
2019	411,399	20,380	265,098	992,144	11,397,163	20,847	23,403	824,353	13,954,787
2020	411,315	20,375	265,059	991,950	11,395,044	20,844	23,400	824,184	13,952,171
2021	411,160	20,369	264,991	991,598	11,391,167	20,834	23,395	823,876	13,947,390
2022	411,576	20,389	265,176	992,543	11,401,562	20,855	23,407	824,705	13,960,213
2023	411,155	20,368	264,990	991,588	11,391,068	20,834	23,395	823,867	13,947,265
2024	411,367	20,379	265,083	992,065	11,396,296	20,846	23,401	824,283	13,953,720
2025	411,310	20,375	265,059	991,941	11,394,920	20,844	23,400	824,174	13,952,023
2026	411,397	20,380	265,096	992,131	11,397,053	20,846	23,403	824,344	13,954,650
2027	411,270	20,373	265,040	991,847	11,393,922	20,843	23,398	824,095	13,950,788
2028	411,480	20,384	265,134	992,328	11,399,191	20,851	23,404	824,512	13,957,284
2029	411,243	20,372	265,030	991,789	11,393,260	20,839	23,398	824,044	13,949,975
2030	411,131	20,366	264,979	991,537	11,390,484	20,833	23,395	823,820	13,946,545
2031	411,543	20,387	265,161	992,474	11,400,781	20,853	23,406	824,640	13,959,245
2032	411,504	20,384	265,144	992,383	11,399,794	20,852	23,406	824,562	13,958,029
2033	411,085	20,364	264,959	991,428	11,389,297	20,831	23,393	823,726	13,945,083
2034	411,350	20,378	265,077	992,028	11,395,896	20,844	23,401	824,252	13,953,226
2035	411,488	20,384	265,137	992,347	11,399,382	20,852	23,404	824,528	13,957,522
Total	21,044,138	1,046,218	13,101,352	50,851,003	594,103,303	1,070,152	1,156,344	42,253,548	724,626,058

Table B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	*Castaic Lake Water Agency (21)*	*Coachella Valley Water District (22)*	*Crestline-Lake Arrowhead Water Agency (23)*	*Desert Water Agency (24)*	*Littlerock Creek Irrigation District (25)*	*Mojave Water Agency (26)*	*Palmdale Water District (27)*	*San Bernardino Valley Municipal Water District (28)*	*San Gabriel Valley Municipal Water District (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	25,596	1,444	32,347	10,843	69,419	19,106
1970	107,807	84,580	19,391	4,902	31,979	1,802	40,392	13,540	86,726	23,866
1971	178,819	105,978	32,229	8,152	53,150	2,991	66,997	22,459	144,138	39,636
1972	363,554	202,627	106,742	30,966	176,039	6,603	213,030	48,102	548,126	144,115
1973	404,652	222,767	121,341	34,672	200,115	7,347	243,318	53,973	724,532	190,154
1974	434,861	235,530	130,626	37,060	215,429	7,678	262,734	56,382	786,098	207,016
1975	504,787	289,504	151,032	43,176	249,083	9,082	303,105	65,581	905,416	238,840
1976	559,010	262,402	160,688	44,452	265,002	10,030	325,510	73,253	964,515	256,567
1977	675,505	335,740	184,812	47,744	304,791	11,887	381,158	87,356	1,069,437	289,792
1978	600,365	377,304	187,079	54,184	308,527	10,710	373,258	78,308	1,148,770	300,860
1979	661,218	349,155	196,313	52,207	323,758	12,128	401,609	87,144	1,125,441	302,536
1980	858,118	415,436	253,145	71,933	417,489	15,436	508,497	112,868	1,518,585	401,277
1981	1,001,679	511,329	285,039	73,515	470,082	18,052	588,242	132,024	1,548,005	420,495
1982	1,128,710	557,766	321,003	89,577	529,399	20,195	649,332	148,024	1,870,874	497,954
1983	1,744,982	832,628	450,048	119,220	742,217	30,644	922,192	225,803	2,372,150	639,508
1984	2,102,215	978,331	548,906	150,425	905,257	36,760	1,111,972	270,793	3,022,668	804,210
1985	2,180,421	1,041,642	588,819	158,882	971,078	39,347	1,199,897	280,068	3,248,795	865,844
1986	2,311,730	1,102,671	618,854	162,759	1,020,615	40,046	1,269,054	295,964	3,318,843	893,151
1987	2,366,241	1,033,003	628,271	167,268	1,036,140	41,767	1,283,953	307,821	3,400,882	913,961
1988	2,303,597	1,042,262	649,475	175,742	1,071,108	40,609	1,321,964	298,478	3,588,837	961,237
1989	2,280,769	1,088,644	613,464	170,051	1,011,725	39,509	1,241,281	292,853	3,501,269	932,861
1990	2,621,843	1,269,459	705,819	200,501	1,164,042	45,230	1,418,184	334,257	4,071,061	1,074,750
1991	2,745,756	1,207,330	765,524	211,034	1,262,504	49,074	1,549,751	359,197	4,355,445	1,152,420
1992	2,781,828	1,578,993	750,421	198,213	1,237,594	49,833	1,539,227	362,879	4,131,404	1,115,652
1993	3,117,418	1,693,880	852,274	235,091	1,405,571	56,252	1,726,010	412,484	5,033,619	1,340,936
1994	2,816,812	1,604,358	822,808	232,288	1,356,974	51,124	1,692,078	375,149	5,173,816	1,369,569
1995	3,141,932	1,729,325	868,414	236,871	1,432,182	59,091	1,808,334	447,562	5,140,415	1,356,549
1996	3,026,048	1,924,548	879,495	231,538	1,450,449	55,677	1,852,824	414,942	4,938,129	1,318,912
1997	3,235,665	1,819,091	950,112	294,180	1,566,940	59,315	1,913,835	444,178	6,163,165	1,601,466
1998	3,882,132	2,029,706	1,123,728	319,298	1,853,255	74,286	3,270,824	563,438	6,695,875	1,802,512
1999	4,424,749	2,443,511	1,240,254	343,709	2,045,421	81,329	3,686,869	606,593	7,298,928	1,944,476
2000	4,219,020	3,847,698	1,139,758	318,236	1,879,688	75,162	3,456,972	560,793	6,737,771	1,792,288
2001	4,047,899	3,740,428	1,063,323	297,562	1,753,637	71,461	3,225,403	534,020	6,255,362	1,663,770
2002	3,834,598	3,588,437	1,007,131	282,455	1,660,967	67,795	3,071,080	506,399	5,970,589	1,587,527
2003	3,748,582	3,510,986	993,289	260,191	1,638,129	67,881	3,025,871	495,771	5,575,458	1,505,369
2004	3,668,020	3,443,363	979,158	263,234	1,614,825	66,408	2,959,801	485,047	5,609,471	1,503,240
2005	3,666,100	3,488,847	1,002,600	292,692	1,653,511	66,364	2,957,774	484,745	6,132,876	1,605,031
2006	3,661,873	3,431,742	973,383	258,808	1,605,297	66,268	2,953,308	484,077	5,530,376	1,486,779
2007	3,662,796	3,447,276	986,734	274,720	1,627,330	66,290	2,954,284	484,222	5,813,237	1,542,121
2008	3,663,390	3,453,055	981,033	267,503	1,617,922	66,300	2,954,909	484,316	5,685,025	1,517,207
2009	3,664,024	3,456,791	987,026	274,547	1,627,807	66,318	2,955,582	484,417	5,810,257	1,541,745
2010	3,662,405	3,452,329	982,240	269,393	1,619,911	66,281	2,953,876	484,162	5,718,514	1,523,574
2011	3,676,667	3,470,977	991,202	276,254	1,634,700	66,552	2,966,198	486,124	5,843,768	1,549,742
2012	3,677,175	3,465,797	988,075	272,217	1,629,536	66,566	2,966,742	486,209	5,771,998	1,535,826
2013	3,680,533	3,482,082	980,294	261,275	1,616,697	66,642	2,970,292	486,739	5,577,741	1,498,492
2014	3,685,723	3,476,559	999,324	282,302	1,648,091	66,763	2,975,770	487,557	5,951,846	1,572,345
2015	3,685,578	3,471,790	982,473	261,783	1,620,297	66,759	2,975,624	487,533	5,587,136	1,501,171
2016	3,684,334	3,488,930	1,001,161	285,132	1,651,124	66,727	2,974,313	487,339	6,002,028	1,581,906
2017	3,685,168	3,483,854	989,253	270,228	1,631,473	66,749	2,975,197	487,473	5,737,181	1,530,377
2018	3,689,086	3,484,425	994,062	274,431	1,639,412	66,838	2,979,334	488,090	5,812,206	1,545,667
2019	3,686,746	3,499,956	1,002,093	285,235	1,652,661	66,785	2,976,873	487,724	6,004,024	1,582,700
2020	3,685,789	3,492,590	990,245	271,172	1,633,107	66,764	2,975,857	487,568	5,754,010	1,533,764
2021	3,684,064	3,465,381	979,501	258,787	1,615,389	66,723	2,974,036	487,298	5,533,801	1,490,516
2022	3,688,724	3,470,327	992,375	272,515	1,636,621	66,833	2,978,964	488,036	5,778,072	1,538,950
2023	3,684,038	3,477,849	1,000,516	284,460	1,650,052	66,723	2,974,012	487,295	5,990,072	1,579,524
2024	3,686,374	3,505,176	989,737	270,298	1,632,274	66,779	2,976,480	487,663	5,738,554	1,530,846
2025	3,685,739	3,447,151	991,358	272,552	1,634,943	66,763	2,975,799	487,563	5,778,556	1,538,542
2026	3,686,724	3,506,512	1,002,797	286,099	1,653,825	66,785	2,976,858	487,720	6,019,370	1,585,692
2027	3,685,285	3,379,009	987,510	268,053	1,628,605	66,751	2,975,326	487,492	5,698,512	1,522,851
2028	3,687,657	3,610,938	981,462	259,639	1,618,615	66,806	2,977,835	487,870	5,549,190	1,494,121
2029	3,685,021	3,435,403	1,000,309	283,792	1,649,719	66,748	2,975,052	487,451	5,978,274	1,577,390
2030	3,683,788	3,478,259	1,000,922	285,070	1,650,735	66,717	2,973,751	487,255	6,000,882	1,581,593
2031	3,688,350	3,383,643	975,757	252,380	1,609,213	66,825	2,978,567	487,975	5,420,247	1,469,079
2032	3,687,921	3,610,751	1,001,408	283,896	1,651,535	66,813	2,978,112	487,907	5,980,325	1,578,276
2033	3,683,260	3,443,824	985,969	267,028	1,626,059	66,704	2,973,194	487,172	5,680,182	1,518,940
2034	3,686,183	3,477,518	985,159	264,792	1,624,725	66,775	2,976,278	487,632	5,640,692	1,511,721
2035	3,687,783	3,509,397	1,016,674	302,596	1,676,720	66,809	2,977,976	487,888	6,312,643	1,643,086
Total	188,341,053	154,346,979	51,138,656	14,117,819	84,337,953	3,401,593	141,069,458	24,965,029	297,997,943	79,296,395

Table B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area					
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)	South Bay Area Future Contractor (38)	Grand Total (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	1,295,621	12,610	1,654,823	0	0	0	0	52,963	4,074,960
1970	14,621	1,624,574	15,745	2,069,925	0	0	0	0	69,745	4,676,285
1971	24,302	2,716,572	26,119	3,421,542	0	0	54	54	55,532	6,185,693
1972	89,133	8,038,443	68,368	10,035,848	0	0	40	40	80,412	12,998,846
1973	117,781	9,890,315	78,312	12,289,279	0	0	1	1	54,219	15,194,202
1974	128,165	11,581,443	83,451	14,166,473	0	0	143	143	76,783	17,372,473
1975	147,901	13,584,561	101,893	16,593,961	0	0	1,069	1,069	84,546	20,517,410
1976	158,663	12,861,931	94,793	16,036,816	0	0	139	139	106,717	20,026,602
1977	178,774	16,203,296	121,961	19,892,253	0	0	892	892	98,617	24,213,092
1978	186,453	17,827,977	132,552	21,586,347	0	0	39	39	100,784	26,030,317
1979	186,702	16,414,595	126,784	20,239,590	0	0	3,235	3,235	119,354	24,676,529
1980	248,433	20,858,275	154,049	25,833,541	0	0	416	416	178,813	31,965,390
1981	259,217	23,737,135	186,669	29,231,483	0	0	3,847	3,847	185,364	35,518,423
1982	308,007	28,013,025	209,230	34,343,096	0	0	10,956	10,956	173,872	41,626,508
1983	394,407	38,950,396	326,240	47,750,435	0	0	(422)	(422)	220,922	56,791,253
1984	497,349	46,903,178	393,364	57,725,428	0	0	643	643	228,379	68,376,692
1985	534,867	49,560,161	412,392	61,082,213	0	0	2,599	2,599	341,247	73,052,658
1986	551,113	52,870,715	442,398	64,897,913	0	0	2,595	2,595	279,230	76,690,089
1987	564,368	50,739,654	411,295	62,894,624	0	0	2,595	2,595	345,118	75,239,563
1988	593,951	51,274,367	406,312	63,727,939	0	0	2,600	2,600	365,289	76,141,132
1989	577,065	52,659,456	431,183	64,840,130	0	0	2,672	2,672	422,602	78,737,649
1990	665,453	60,788,215	492,091	74,850,905	0	0	2,687	2,687	473,511	91,098,736
1991	712,897	61,095,493	472,480	75,938,905	0	0	2,730	2,730	214,593	91,106,860
1992	688,560	67,459,719	502,122	82,396,445	0	0	2,774	2,774	443,727	100,081,699
1993	829,949	68,916,259	540,210	86,159,953	0	0	2,529	2,529	599,903	107,540,172
1994	847,474	65,777,592	472,329	82,592,371	0	0	3,058	3,058	609,347	103,760,268
1995	837,867	69,976,834	526,567	87,561,943	0	0	3,210	3,210	534,472	109,793,975
1996	812,684	72,854,840	546,141	90,306,227	0	0	3,370	3,370	568,364	114,156,896
1997	994,307	78,200,738	565,836	97,808,828	0	0	3,437	3,437	431,954	120,577,289
1998	1,104,607	83,815,639	613,171	107,148,471	0	0	3,618	3,618	463,530	134,096,388
1999	1,192,434	99,655,738	723,017	125,687,028	0	0	4,480	4,480	643,382	157,636,273
2000	1,099,145	95,100,726	716,301	120,943,558	0	0	4,337	4,337	708,964	151,556,193
2001	1,020,195	90,592,903	693,471	114,959,434	0	0	4,103	4,103	746,513	143,867,961
2002	973,556	85,851,948	656,912	109,059,394	0	0	3,908	3,908	755,374	136,798,611
2003	929,274	82,966,699	652,551	105,370,051	0	0	3,908	3,908	755,832	132,862,379
2004	929,083	81,698,092	641,095	103,860,837	0	0	3,908	3,908	730,949	130,629,106
2005	995,827	85,161,239	653,166	108,160,772	0	0	3,908	3,908	730,703	134,920,581
2006	918,441	80,933,175	638,310	102,941,837	0	0	3,908	3,908	730,165	129,683,277
2007	954,682	82,772,038	642,362	105,228,092	0	0	3,908	3,908	730,281	131,973,496
2008	938,342	82,353,392	643,858	104,626,252	0	0	3,908	3,908	730,356	131,374,239
2009	954,409	82,889,624	644,814	105,357,361	0	0	3,908	3,908	730,438	132,108,089
2010	942,541	82,810,927	643,712	105,129,865	0	0	3,908	3,908	730,229	131,873,482
2011	959,448	83,181,591	647,605	105,750,828	0	0	3,908	3,908	734,088	132,606,718
2012	950,319	82,993,682	646,215	105,450,357	0	0	3,908	3,908	734,154	132,308,402
2013	925,770	83,141,762	650,358	105,338,677	0	0	3,908	3,908	734,578	132,211,296
2014	974,050	83,688,629	648,668	106,457,627	0	0	3,908	3,908	735,238	133,352,918
2015	927,410	82,707,590	647,418	104,922,562	0	0	3,908	3,908	735,218	131,817,172
2016	980,342	84,145,022	651,991	107,000,349	0	0	3,908	3,908	735,058	133,889,415
2017	946,556	83,808,124	650,616	106,262,249	0	0	3,908	3,908	735,162	133,154,916
2018	956,483	83,548,746	650,587	106,129,367	0	0	3,908	3,908	735,661	133,039,153
2019	980,807	85,098,320	654,786	107,978,710	0	0	3,908	3,908	735,360	134,878,151
2020	948,765	83,380,149	652,890	105,872,670	0	0	3,908	3,908	735,239	132,768,003
2021	920,463	82,238,370	645,795	104,360,124	0	0	3,908	3,908	735,022	131,247,952
2022	952,097	83,919,788	646,891	106,430,193	0	0	3,908	3,908	735,608	133,338,160
2023	978,791	83,917,195	649,083	106,739,610	0	0	3,908	3,908	735,015	133,627,240
2024	946,837	84,279,391	656,176	106,766,585	0	0	3,908	3,908	735,309	133,664,346
2025	951,897	82,039,051	640,918	104,510,832	0	0	3,908	3,908	735,233	131,405,929
2026	982,767	85,643,831	656,517	108,555,497	0	0	3,908	3,908	735,354	135,454,725
2027	941,625	79,518,621	622,984	101,782,624	0	0	3,908	3,908	735,176	128,675,783
2028	922,738	86,749,712	683,986	109,090,569	0	0	3,908	3,908	735,474	135,993,933
2029	977,366	82,734,495	637,856	105,488,876	0	0	3,908	3,908	735,141	132,380,756
2030	980,150	84,140,362	649,204	106,978,688	0	0	3,908	3,908	734,982	133,865,185
2031	906,315	80,326,347	624,068	102,188,766	0	0	3,908	3,908	735,564	129,095,210
2032	977,879	87,377,670	683,924	110,366,417	0	0	3,908	3,908	735,509	137,270,950
2033	939,105	82,342,784	640,153	104,654,374	0	0	3,908	3,908	734,915	131,538,578
2034	934,309	82,978,934	648,901	105,283,619	0	0	3,908	3,908	735,288	132,180,605
2035	1,020,352	86,645,340	657,229	110,004,493	0	0	3,908	3,908	735,484	136,908,232
Total	49,006,165	4,280,795,770	33,170,559	5,401,985,372	0	0	207,318	207,318	35,263,411	6,738,814,054

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (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	115,970	114,196	230,166	616,865	804,606	2,116,236	3,537,707	0	0	0
1989	64,584	138,240	202,824	407,353	396,069	1,389,347	2,192,769	0	0	0
1990	77,126	138,805	215,931	535,269	514,372	1,490,250	2,539,891	0	0	0
1991	35,178	245,181	280,359	355,578	477,883	1,065,488	1,898,949	0	165,930	165,930
1992	74,573	230,716	305,289	405,244	529,119	1,183,466	2,117,829	0	0	0
1993	89,213	247,977	337,190	841,383	256,930	1,552,562	2,650,875	0	0	0
1994	111,942	229,598	341,540	501,812	559,683	1,395,238	2,456,733	0	0	0
1995	96,842	235,606	332,448	833,226	492,579	796,524	2,122,329	0	0	0
1996	59,556	192,297	251,853	341,022	284,531	1,111,553	1,737,106	672	0	672
1997	48,518	193,255	241,773	455,751	294,951	1,220,497	1,971,199	44,788	298,986	343,774
1998	86,652	264,449	351,101	436,065	400,311	1,161,790	1,998,166	208,824	1,082,375	1,291,199
1999	151,185	301,781	452,966	733,214	702,669	1,465,335	2,901,218	183,310	1,298,220	1,481,530
2000	154,461	226,371	380,832	645,098	523,006	1,402,388	2,570,492	278,441	1,547,362	1,825,803
2001	160,709	174,488	335,197	656,122	531,944	1,426,354	2,614,420	318,612	1,749,230	2,067,842
2002	180,705	192,596	373,301	721,556	584,993	1,568,599	2,875,148	350,386	1,923,676	2,274,062
2003	147,374	153,696	301,070	575,819	486,319	1,251,780	2,313,918	279,616	1,535,140	1,814,756
2004	138,834	170,681	309,515	531,040	484,862	1,154,434	2,170,336	778,128	1,415,758	2,193,886
2005	152,401	183,618	336,019	570,922	521,276	1,241,135	2,333,333	836,567	1,522,083	2,358,650
2006	152,405	180,518	332,923	560,921	512,145	1,219,392	2,292,458	821,912	1,495,420	2,317,332
2007	151,576	176,555	328,131	548,251	500,577	1,191,849	2,240,677	803,348	1,461,642	2,264,990
2008	180,473	206,786	387,259	641,711	585,909	1,395,023	2,622,643	940,293	1,710,806	2,651,099
2009	181,667	204,817	386,484	635,189	579,955	1,380,846	2,595,990	930,737	1,693,421	2,624,158
2010	181,752	201,683	383,435	625,067	570,714	1,358,842	2,554,623	915,906	1,666,437	2,582,343
2011	181,890	198,708	380,598	615,453	561,934	1,337,940	2,515,327	901,818	1,640,802	2,542,620
2012	182,510	196,348	378,858	607,748	554,900	1,321,191	2,483,839	890,528	1,620,263	2,510,791
2013	84,524	89,785	174,309	277,730	253,580	603,760	1,135,070	406,956	740,431	1,147,387
2014	30,382	31,721	62,103	98,057	89,531	213,169	400,757	143,683	261,423	405,106
2015	13,803	13,973	27,776	43,168	39,414	93,844	176,426	63,254	115,087	178,341
2016	8,801	8,661	17,462	26,757	24,430	58,168	109,355	39,206	71,335	110,541
2017	5,866	5,616	11,482	17,351	15,842	37,720	70,913	25,424	46,257	71,681
2018	5,966	5,562	11,528	17,181	15,687	37,351	70,219	25,176	45,806	70,982
2019	6,116	5,555	11,671	17,161	15,668	37,306	70,135	25,146	45,751	70,897
2020	6,258	5,546	11,804	17,135	15,644	37,250	70,029	25,107	45,681	70,788
2021	3,816	3,368	7,184	10,407	9,502	22,623	42,532	15,248	27,745	42,993
2022	3,822	3,374	7,196	10,424	9,517	22,661	42,602	15,273	27,790	43,063
2023	6,175	5,451	11,626	16,839	15,375	36,608	68,822	24,675	44,894	69,569
2024	6,173	5,450	11,623	16,836	15,373	36,600	68,809	24,670	44,886	69,556
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	3,570,805	5,183,028	8,753,833	16,564,871	14,962,571	44,937,538	76,464,980	10,317,704	25,344,637	35,662,341

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	San Joaquin Valley Area							
			Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Municipal and Industrial (13)	Agricultural (14)	County of Kings (15)	Oak Flat Water District (16)	Tulare Lake Basin Water Storage District (17)	Total (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	425,261	31,146	1,130,988	9,910,050	35,851	26,779	850,225	12,410,300
1989	331,852	17,226	607,908	7,400,983	22,959	24,306	754,007	9,159,241
1990	219,381	7,731	428,482	5,216,562	12,089	12,046	344,943	6,241,234
1991	13,048	3,111	570,942	146,276	0	1,354	30,685	765,416
1992	244,630	13,935	706,155	5,788,599	18,587	15,716	480,903	7,268,525
1993	471,706	25,543	1,202,455	11,405,212	37,276	36,803	1,159,908	14,338,903
1994	262,029	15,161	901,463	6,786,208	19,257	19,061	567,521	8,570,700
1995	626,214	16,830	1,486,494	12,489,555	41,276	36,378	1,051,178	15,747,925
1996	382,731	12,554	958,548	8,684,339	26,883	22,479	1,591,968	11,679,502
1997	423,144	(6)	794,476	7,471,645	(31)	22,025	137,304	8,848,557
1998	496,853	4,839	865,969	8,816,749	134	26,683	184,608	10,395,835
1999	483,164	23,308	1,231,359	9,187,015	29,355	28,530	2,075,841	13,058,572
2000	278,823	15,673	697,568	6,254,525	20,897	20,310	619,085	7,906,881
2001	283,588	15,941	709,489	6,361,411	21,254	20,657	629,665	8,042,005
2002	311,869	17,531	780,244	6,995,815	23,374	22,717	692,459	8,844,009
2003	248,880	13,990	622,654	5,582,830	18,653	18,129	552,599	7,057,735
2004	229,525	12,902	554,011	5,217,827	17,202	16,719	509,626	6,557,812
2005	246,763	13,871	595,618	5,609,696	18,495	17,975	547,899	7,050,317
2006	242,440	13,628	585,184	5,511,427	18,171	17,659	538,302	6,926,811
2007	236,964	13,320	571,967	5,386,938	17,760	17,261	526,143	6,770,353
2008	277,359	15,591	669,469	6,305,242	20,788	20,203	615,834	7,924,486
2009	274,540	15,432	662,666	6,241,166	20,577	19,998	609,575	7,843,954
2010	270,166	15,186	652,106	6,141,714	20,248	19,679	599,862	7,718,961
2011	266,010	14,953	642,075	6,047,239	19,937	19,376	590,635	7,600,225
2012	262,680	14,765	634,038	5,971,539	19,688	19,134	583,241	7,505,085
2013	120,040	6,747	289,744	2,728,886	8,997	8,744	266,531	3,429,689
2014	42,382	2,383	102,299	963,483	3,176	3,087	94,104	1,210,914
2015	18,658	1,049	45,035	424,156	1,398	1,359	41,428	533,083
2016	11,565	650	27,914	262,906	867	843	25,678	330,423
2017	7,499	421	18,102	170,484	563	547	16,651	214,267
2018	7,427	417	17,925	168,819	556	541	16,488	212,173
2019	7,417	417	17,903	168,616	556	540	16,469	211,918
2020	7,406	416	17,876	168,359	555	540	16,443	211,595
2021	4,498	252	10,857	102,252	337	328	9,987	128,511
2022	4,505	253	10,875	102,420	338	328	10,004	128,723
2023	7,278	409	17,568	165,461	546	530	16,160	207,952
2024	7,277	409	17,565	165,427	545	530	16,158	207,911
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	10,135,345	475,102	23,838,793	222,796,349	677,665	701,253	20,480,655	279,105,162

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (19)	Castaic Lake Water Agency (20)	Coachella Valley Water District (21)	Crestline-Lake Arrowhead Water Agency (22)	Desert Water Agency (23)	Littlerock Creek Irrigation District (24)	Mojave Water Agency (25)	Palmdale Water District (26)	San Bernardino Valley Municipal Water District (27)	San Gabriel Valley Municipal Water District (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	2,688,113	1,776,471	1,940,156	187,156	3,194,137	30,395	846	126,639	2,000,664	839,774
1989	2,357,669	1,348,806	1,326,863	132,076	2,218,516	50,948	13,206	493,424	1,257,332	792,087
1990	2,528,625	1,335,341	1,463,452	115,746	2,413,745	110,678	0	545,342	1,192,997	1,054,762
1991	1,048,414	531,160	1,022,405	125,256	1,686,304	65,111	473,291	488,207	540,119	796,531
1992	2,760,199	1,548,472	1,124,775	55,985	1,855,065	22,891	1,130,876	367,996	362,232	853,047
1993	3,559,486	1,332,392	2,256,338	29,498	3,721,492	60,615	1,101,799	640,919	425,969	1,406,255
1994	3,963,982	1,450,328	1,345,145	74,879	2,218,411	88,549	1,371,116	678,876	871,358	1,452,741
1995	4,324,008	1,901,361	2,498,461	44,237	4,120,838	43,893	881,146	636,540	75,278	1,397,624
1996	3,356,408	1,413,667	4,382,928	34,165	7,229,059	29,421	508,858	680,978	427,170	1,126,322
1997	3,411,379	1,468,949	4,294,703	42,135	4,319,206	24,319	891,191	648,652	625,340	1,175,556
1998	4,187,503	1,683,675	8,177,823	17,500	6,274,200	31,964	535,017	692,451	175,745	871,241
1999	4,900,219	1,684,023	1,776,897	149,998	2,930,727	139,629	414,547	799,924	1,427,133	1,384,595
2000	3,612,080	1,474,550	1,264,940	106,781	2,086,330	106,483	1,082,493	800,935	2,935,100	876,149
2001	3,829,293	1,638,668	1,286,557	108,606	2,121,984	108,303	1,100,992	814,622	3,202,470	891,122
2002	4,393,301	1,970,138	1,414,862	119,437	2,333,603	119,103	1,210,790	895,863	3,717,840	979,991
2003	3,660,681	1,719,761	1,129,094	105,089	1,862,272	95,047	1,210,633	714,920	3,138,002	879,814
2004	3,365,218	1,755,410	1,041,289	105,932	1,717,450	87,655	1,116,487	659,323	4,624,944	721,239
2005	3,779,797	2,041,176	1,119,491	123,580	1,846,434	94,239	1,442,651	708,840	4,972,286	775,405
2006	3,880,644	2,165,661	1,099,881	129,033	1,814,089	92,588	1,655,448	696,422	4,885,183	761,822
2007	3,964,148	2,287,831	1,075,037	135,427	1,773,113	90,496	1,850,748	680,693	4,774,839	744,615
2008	4,848,303	2,677,835	1,258,297	169,407	2,075,374	105,923	2,438,601	796,729	5,588,800	1,568,786
2009	5,014,426	2,650,622	1,245,510	178,469	2,054,282	104,847	2,683,410	788,633	5,532,004	862,691
2010	5,157,696	2,608,385	1,225,662	177,748	2,021,548	103,176	2,905,945	776,066	5,443,852	848,944
2011	5,306,934	2,568,261	1,206,809	184,939	1,990,451	101,590	3,122,458	764,128	5,360,113	835,885
2012	5,476,247	2,536,111	1,191,702	192,427	1,965,534	100,318	3,341,315	754,563	5,293,014	825,422
2013	2,615,062	1,158,958	544,586	92,415	898,214	45,843	1,644,797	344,822	2,418,812	424,353
2014	964,815	409,191	192,276	34,210	317,131	16,186	629,003	121,745	854,006	133,178
2015	428,770	180,139	84,646	15,757	139,611	7,125	276,908	53,596	375,961	58,629
2016	265,766	111,656	52,466	10,085	86,535	4,417	171,636	33,221	233,033	36,340
2017	172,339	72,405	34,022	6,746	56,115	2,864	111,299	21,542	151,113	23,566
2018	170,656	71,697	33,690	6,884	55,567	2,836	110,212	21,332	149,637	42,003
2019	170,451	71,611	33,649	7,080	55,500	2,833	110,080	21,306	149,457	23,307
2020	170,191	71,502	33,598	7,273	55,415	2,829	109,912	21,274	149,229	23,271
2021	103,364	43,426	20,406	4,496	33,657	1,717	66,755	12,920	90,634	14,134
2022	103,534	43,498	20,439	4,584	33,711	1,721	66,864	12,942	90,782	15,927
2023	167,260	70,271	33,020	7,533	54,462	2,779	108,020	20,907	146,660	22,871
2024	167,227	70,257	33,013	7,660	54,451	2,779	107,998	20,903	146,631	22,866
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	114,561,212	54,438,762	56,400,034	3,721,521	82,643,341	2,215,303	35,999,134	18,049,600	78,117,390	29,066,662

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				Total State Water Project (a
	San Gorgonio Pass Water Agency (29)	Metropolitan Water District of Southern California (30)	Ventura County Flood Control District (31)	Total (32)	City of Yuba City (33)	County of Butte (34)	Plumas County FC&WCD (35)	Total (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	79,936,309	0	92,720,660	0	0	0	0	108,898,833
1989	0	68,311,546	0	78,302,473	0	0	0	0	89,857,307
1990	0	83,964,409	277,885	95,002,982	0	0	0	0	104,000,038
1991	0	54,214,229	132,209	61,123,236	0	0	0	0	64,233,890
1992	0	72,401,054	0	82,482,592	0	0	0	0	92,174,235
1993	0	55,312,617	0	69,847,380	0	0	0	0	87,174,348
1994	0	72,838,621	0	86,354,006	0	0	0	0	97,722,979
1995	0	40,862,810	0	56,786,196	0	0	0	0	74,988,898
1996	0	33,993,131	0	53,182,107	0	0	0	0	66,851,240
1997	0	37,121,379	108,559	54,131,368	0	0	0	0	65,536,671
1998	0	31,854,999	157,027	54,659,145	0	0	0	0	68,695,446
1999	0	62,189,490	129,073	77,926,255	0	0	0	0	95,820,541
2000	54,759	69,887,357	496,674	84,784,631	0	0	0	0	97,468,639
2001	200,503	70,632,224	505,162	86,440,506	0	0	0	0	99,499,970
2002	220,498	66,925,921	555,540	84,856,887	0	0	0	0	99,223,407
2003	234,617	60,583,452	443,334	75,776,716	0	0	0	0	87,264,195
2004	216,372	59,797,117	817,716	76,026,152	0	0	0	0	87,257,701
2005	339,240	65,437,515	879,128	83,559,782	0	0	0	0	95,638,101
2006	357,104	65,420,574	863,727	83,822,176	0	0	0	0	95,691,700
2007	805,114	65,046,770	844,218	84,073,049	0	0	0	0	95,677,200
2008	942,361	77,427,244	988,131	100,885,791	0	0	0	0	114,471,278
2009	932,785	77,919,311	978,089	100,945,079	0	0	0	0	114,395,665
2010	917,921	77,936,216	962,503	101,085,662	0	0	0	0	114,325,024
2011	903,801	77,976,540	947,698	101,269,607	0	0	0	0	114,308,377
2012	892,486	78,224,098	935,834	101,729,071	0	0	0	0	114,607,644
2013	407,851	36,306,200	427,660	47,329,573	0	0	0	0	53,216,028
2014	143,999	13,015,997	150,993	16,982,730	0	0	0	0	19,061,610
2015	63,393	5,816,977	66,472	7,567,984	0	0	0	0	8,483,610
2016	39,293	3,659,429	41,202	4,745,079	0	0	0	0	5,312,860
2017	25,480	2,407,933	26,718	3,112,142	0	0	0	0	3,480,485
2018	25,231	2,419,006	26,457	3,135,208	0	0	0	0	3,500,110
2019	25,201	2,450,651	26,425	3,147,551	0	0	0	0	3,512,172
2020	25,163	2,481,415	26,385	3,177,457	0	0	0	0	3,541,673
2021	15,282	1,518,262	16,024	1,941,077	0	0	0	0	2,162,297
2022	15,308	1,520,759	16,051	1,946,120	0	0	0	0	2,167,704
2023	24,729	2,456,793	25,930	3,141,235	0	0	0	0	3,499,204
2024	24,724	2,456,308	25,925	3,140,742	0	0	0	0	3,498,641
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	7,853,215	1,958,712,592	11,898,749	2,453,677,515	0	0	0	0	2,853,663,831

a) Costs allocated to contractors in 1989 through 1993 are reduced by credits for Off-Aqueduct Power Facility costs allocated to the pumping of non-SWP water.

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

Calendar Year	North Bay Aqueduct						South Bay Aqueduct		California Aqueduct	
	Reach 1		Reach 3A		Reach 3B		Reach 1		Reach 1	
	Barker Slough Pumping Plant		Cordelia Pumping Plant Solano County Water Agency		Cordelia Pumping Plant Napa County FC&WCD (a		South Bay and Del Valle Pumping Plants (b		Banks Pumping Plant	
	Unit Rate (1)	Cumulative Unit Rate (2)	Unit Rate (3)	Cumulative Unit Rate (4)	Unit Rate (5)	Cumulative Unit Rate (6)	Unit Rate (7)	Cumulative Unit Rate (8)	Unit Rate (9)	Cumulative Unit Rate (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	4.1752198	0.2445431	0.2445431
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	6.8245097	1.6158914	1.6158914
1979	0	0	0	0	2.4747752	2.4747752	4.9524184	7.1045026	2.1520842	2.1520842
1980	0	0	0	0	2.9737588	2.9737588	4.5186576	5.8960239	1.3773663	1.3773663
1981	0	0	0	0	2.6488168	2.6488168	4.3834851	6.4662961	2.0828110	2.0828110
1982	0	0	0	0	10.0222589	10.0222589	5.6383622	7.4121096	1.7737474	1.7737474
1983	0	0	0	0	1.0240490	1.0240490	0.8686507	1.7250802	0.8564295	0.8564295
1984	0	0	0	0	1.6524119	1.6524119	2.7719370	3.9566693	1.1847323	1.1847323
1985	0	0	0	0	2.5219114	2.5219114	3.6942124	5.3128683	1.6186559	1.6186559
1986	0	0	0	0	4.4046604	4.4046604	7.2799131	10.6056639	3.3257508	3.3257508
1987	0	0	0	0	3.5386715	3.5386715	6.4837861	9.2421280	2.7583419	2.7583419
1988	1.1792022	1.1792022	0.0007801	1.1799823	4.4545623	5.6337645	6.1749958	8.7900561	2.6150603	2.6150603
1989	1.2712038	1.2712038	2.5418648	3.8130686	4.2795803	5.5507841	8.1600349	11.6976286	3.5375937	3.5375937
1990	2.0024548	2.0024548	4.2324041	6.2348589	5.8752161	7.8776709	11.7200790	15.8670513	4.1469723	4.1469723
1991	1.2488027	1.2488027	2.6241245	3.8729272	3.8050725	5.0538752	7.5402614	11.2642636	3.7240022	3.7240022
1992	0.7095451	0.7095451	1.4174620	2.1270071	2.3506623	3.0602074	4.0600957	6.4118184	2.3517227	2.3517227
1993	-0.3463994	-0.3463994	-0.6048649	-0.9512643	-1.0204313	-1.3668307	-1.4929839	-1.2402745	0.2527094	0.2527094
1994	1.4607776	1.4607776	2.6575471	4.1183247	4.2850412	5.7458188	7.9485622	11.2592004	3.3106382	3.3106382
1995	0.7544766	0.7544766	1.2974895	2.0519661	2.2753763	3.0298529	3.2312761	5.2800374	2.0487613	2.0487613
1996	1.6427834	1.6427834	2.7704025	4.4131859	4.7993051	6.4420885	8.0186622	11.3848408	3.3661786	3.3661786
1997	1.7819744	1.7819744	3.0250271	4.8070015	5.0580511	6.8400255	9.6532500	12.6557894	3.0025394	3.0025394
1998	-0.3463915	-0.3463915	-0.9149582	-1.2613497	-0.9389812	-1.2853727	-1.9723884	-1.8653920	0.1069964	0.1069964
1999	3.3966685	3.3966685	4.1508234	7.5474919	9.7178022	13.1144707	11.8705485	16.6664605	4.7959120	4.7959120
2000	2.1900809	2.1900809	3.2868739	5.4769548	6.6429403	8.8330212	13.6958504	18.9389661	5.2431157	5.2431157
2001	2.3376797	2.3376797	3.5098904	5.8475701	7.2273653	9.5650450	14.4994681	20.0259422	5.5264741	5.5264741
2002	2.2065638	2.2065638	4.0698207	6.2763845	9.1573646	11.3639284	11.9893629	16.8174756	4.8281127	4.8281127
2003	2.4032212	2.4032212	4.4414642	6.8446854	9.9258453	12.3290665	12.9736310	18.1609641	5.1873331	5.1873331
2004	2.4545455	2.4545455	4.9417591	7.3963046	10.0022440	12.4567895	13.0660532	18.2858142	5.2197610	5.2197610
2005	2.3608579	2.3608579	4.7716667	7.1325246	9.6098901	11.9707480	12.5323830	17.5601723	5.0277893	5.0277893
2006	2.1480658	2.1480658	4.3461090	6.4941748	8.7313900	10.8794558	11.3722394	15.9844193	4.6121799	4.6121799
2007	2.2005010	2.2005010	4.4856109	6.6861119	8.9335279	11.1340289	11.6232872	16.3244465	4.7011593	4.7011593
2008	2.2368432	2.2368432	4.5796811	6.8165243	9.0744720	11.3113152	11.7865106	16.5465892	4.7600786	4.7600786
2009	2.2758540	2.2758540	4.6785933	6.9544473	9.2175897	11.4934437	11.9588245	16.7807360	4.8219115	4.8219115
2010	2.1960260	2.1960260	4.5341339	6.7301599	8.8857503	11.0817763	11.5098777	16.1706081	4.6607304	4.6607304
2011	2.3438173	2.3438173	4.8758942	7.2197115	9.4760794	11.8198967	12.2535957	17.1811338	4.9275381	4.9275381
2012	2.3757070	2.3757070	4.9646672	7.3403742	9.5984371	11.9741441	12.3893777	17.3661479	4.9767702	4.9767702
2013	2.5569750	2.5569750	5.3968304	7.9538054	10.3216386	12.8786136	13.3096330	18.6162883	5.3066553	5.3066553
2014	2.8397583	2.8397583	6.0292886	8.8690469	11.4534438	14.2932021	14.7398191	20.5605190	5.8206999	5.8206999
2015	2.8443351	2.8443351	6.0066134	8.8509485	11.4658257	14.3101608	14.6961649	20.5017421	5.8055772	5.8055772
2016	2.7885526	2.7885526	5.8592817	8.6478343	11.2348718	14.0234244	14.3470372	20.0262510	5.6792138	5.6792138
2017	2.8444866	2.8444866	5.9472408	8.7917274	11.4542299	14.2987165	14.5742128	20.3351429	5.7609301	5.7609301
2018	3.0671943	3.0671943	6.3828845	9.4500788	12.3703907	15.4375850	15.6541755	21.8030441	6.1488686	6.1488686
2019	2.9505920	2.9505920	6.1119427	9.0625347	11.9222634	14.8728554	15.0016277	20.9160842	5.9144565	5.9144565
2020	2.9107663	2.9107663	6.0059873	8.9167536	11.7799598	14.6907261	14.7416011	20.5632039	5.8216028	5.8216028
2021	2.8202679	2.8202679	5.8133121	8.6335800	11.4116400	14.2319079	14.2686702	19.9194858	5.6508156	5.6508156
2022	3.0714413	3.0714413	6.3310510	9.4024923	12.4279600	15.4994013	15.5394468	21.6469548	6.1075080	6.1075080
2023	2.8177551	2.8177551	5.8081529	8.6259080	11.4014800	14.2192351	14.2559787	19.9028088	5.6468301	5.6468301
2024	2.9441454	2.9441454	6.0686624	9.0128078	11.9128000	14.8569454	14.8953404	20.7718528	5.8765124	5.8765124
2025	2.9109821	2.9109821	6.0003185	8.9113006	11.7786400	14.6896221	14.7275798	20.5431793	5.8155995	5.8155995
2026	2.9624745	2.9624745	6.1064013	9.0688758	11.9870000	14.9494745	14.9881011	20.8974685	5.9093674	5.9093674
2027	2.8866964	2.8866964	5.9502229	8.8369193	11.6804400	14.5671364	14.6047234	20.3771643	5.7724409	5.7724409
2028	3.0140306	3.0140306	6.2127070	9.2267376	12.1956400	15.2096706	15.2489415	21.2524666	6.0035251	6.0035251
2029	2.8708801	2.8708801	5.9176115	8.7884916	11.6163600	14.4872401	14.5246543	20.2672577	5.7426034	5.7426034
2030	2.8036607	2.8036607	5.7790764	8.5827371	11.3444000	14.1480607	14.1846223	19.8054968	5.6208745	5.6208745
2031	3.0525128	3.0525128	6.2920701	9.3445829	12.3513600	15.4038728	15.4436915	21.5174116	6.0737201	6.0737201
2032	3.0286097	3.0286097	6.2427707	9.2713804	12.2546000	15.2832097	15.3226702	21.3526701	6.0299999	6.0299999
2033	2.7751148	2.7751148	5.7202229	8.4953377	11.2289600	14.0040748	14.0402234	19.6088845	5.5686611	5.5686611
2034	2.9344388	2.9344388	6.0486624	8.9831012	11.8736000	14.8080388	14.8462606	20.7049190	5.8586584	5.8586584
2035	3.0186862	3.0186862	6.2222930	9.2409792	12.2144800	15.2331662	15.2725106	21.2841107	6.0116001	6.0116001

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

(Dollars per Acre-Foot)

	California Aqueduct (continued)									
	Reach 4		Reach 14A		Reach 15A		Reach 16A		Reach 17E	
	Dos Amigos Pumping Plant		Buena Vista Pumping Plant		Teerink Pumping Plant		Chrisman Pumping Plant		Edmonston Pumping Plant	
Calendar Year	Unit Rate (11)	Cumulative Unit Rate (12)	Unit Rate (13)	Cumulative Unit Rate (14)	Unit Rate (15)	Cumulative Unit Rate (16)	Unit Rate (17)	Cumulative Unit Rate (18)	Unit Rate (19)	Cumulative Unit Rate (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	1.0745886	2.6181208	0	0	0	0	0	0	0	0
1969	0.7051830	1.8118981	0	0	0	0	0	0	0	0
1970	0.7838143	1.7303492	0.3333333	2.0636825	0	0	0	0	0	0
1971	0.4151197	1.2959634	1.3603318	2.6562952	4.9729730	7.6292682	0	0	0	0
1972	0.5689843	1.4720839	1.0818018	2.5538857	1.1418280	3.6957137	2.2892599	5.9849736	7.3206022	13.3055758
1973	0.6025584	1.5411975	0.9854386	2.5266361	1.2143719	3.7410080	2.1051633	5.8461713	7.4512435	13.2974148
1974	0.5766848	1.4739254	0.9233319	2.3972573	1.0924098	3.4896671	1.9449022	5.4345693	6.9004732	12.3350425
1975	0.4638166	1.5600186	0.8201332	2.3801518	0.9574493	3.3376011	1.9610412	5.2986423	6.9962702	12.2949125
1976	0.5196472	1.7137740	0.9637643	2.6775383	1.0211874	3.6987257	2.2275746	5.9263003	7.9384515	13.8647518
1977	0.6172856	2.3852592	1.0980643	3.4833235	1.3715867	4.8549102	2.9301764	7.7850866	9.9990004	17.7840870
1978	0.4578324	2.0737238	0.9617095	3.0354333	1.0432294	4.0786627	1.9992416	6.0779043	7.1214594	13.1993637
1979	0.6624709	2.8145551	1.1111583	3.9257134	1.2652451	5.1909585	2.7288840	7.9198425	9.6837428	17.6035853
1980	0.8090774	2.1864437	1.3528383	3.5392820	1.5041463	5.0434283	3.2274062	8.2708345	11.0353314	19.3061659
1981	1.0965610	3.1793720	1.2422925	4.4216645	1.3219771	5.7436416	2.9988606	8.7425022	10.0207633	18.7632655
1982	0.8365509	2.6102983	1.2049224	3.8152207	1.3715109	5.1867316	2.9378063	8.1245379	10.2606361	18.3851740
1983	0.3691099	1.2255394	0.7604543	1.9859937	0.8857383	2.8717320	1.8026411	4.6743731	5.5653668	10.2397399
1984	0.6642414	1.8489737	1.0562168	2.9051905	1.2202995	4.1254900	2.5897300	6.7152200	8.3105777	15.0257977
1985	0.8780315	2.4966874	1.4221464	3.9188338	1.6516280	5.5704618	3.5176053	9.0880671	11.8858945	20.9739616
1986	1.4047267	4.7304775	2.3730496	7.1035271	2.7567993	9.8603264	6.0029982	15.8633246	20.6708919	36.5342165
1987	1.2966188	4.0549607	2.2362590	6.2912197	2.5459999	8.8372196	5.3658848	14.2031044	17.8358435	32.0389479
1988	1.2001961	3.8152564	2.1148911	5.9301475	2.4017135	8.3318610	5.0600095	13.3918705	16.6769503	30.0688208
1989	1.4991710	5.0367647	2.6962512	7.7330159	3.0078924	10.7409083	6.6054692	17.3463775	22.2552075	39.6015850
1990	1.9023461	6.0493184	3.3101004	9.3594188	3.7483042	13.1077230	8.7425943	21.8503173	31.1242008	52.9745181
1991	1.0592185	4.7832207	2.1212585	6.9044792	2.4222131	9.3266923	5.7602628	15.0869551	20.6196938	35.7066489
1992	0.9064819	3.2582046	1.4858303	4.7440349	1.7077285	6.4517634	3.6067199	10.0584833	12.1335007	22.1919840
1993	0.1664878	0.4191972	-0.1384508	0.2807464	-0.1312944	0.1494520	-0.7173389	-0.5678869	-3.5014056	-4.0692925
1994	1.4294391	4.7400773	2.5099528	7.2500301	2.7989861	10.0490162	6.1401376	16.1891538	21.5691939	37.7583477
1995	0.8047106	2.8534719	1.3496693	4.2031412	1.4945512	5.6976924	3.1864400	8.8841324	10.8322270	19.7163594
1996	1.6800489	5.0462275	2.5976511	7.6438786	2.8425251	10.4864037	6.3772852	16.8636889	22.7383751	39.6020640
1997	1.2932406	4.2957800	2.4757060	6.7714860	2.6731089	9.4445949	6.3599535	15.8045484	23.1336040	38.9381524
1998	-0.2228732	-0.1158768	-0.4376645	-0.5535413	-0.4687358	-1.0222771	-1.0461064	-2.0683835	-3.9555691	-6.0239526
1999	1.9342355	6.7301475	4.6648014	11.3949489	5.8521939	17.2471428	12.7726347	30.0197775	45.8424770	75.8622545
2000	2.1799826	7.4230983	3.8641338	11.2872321	4.6353845	15.9226166	10.0169020	25.9395186	35.6160490	61.5555676
2001	2.3115715	7.8380456	4.0955156	11.9335612	4.9129064	16.8464676	10.6155897	27.4620573	37.7554127	65.2174700
2002	2.1344715	6.9625842	3.7334967	10.6960809	3.7841653	14.4802462	9.0549310	23.5351772	34.1837720	57.7189492
2003	2.3125605	7.4998936	4.0442086	11.5441022	4.1028201	15.6469223	9.8189590	25.4658813	37.0757048	62.5415861
2004	2.3299305	7.5496915	4.0735791	11.6232706	4.1367748	15.7600454	9.9023285	25.6623739	37.3968714	63.0592453
2005	2.2351422	7.2629315	3.9071763	11.1701078	3.9715767	15.1416845	9.5083361	24.6500206	35.9166201	60.5666407
2006	2.0279429	6.6401228	3.5454910	10.1856138	3.6015209	13.7871347	8.6214828	22.4086175	32.5616772	54.9702947
2007	2.0729903	6.7741496	3.6237634	10.3979130	3.6835655	14.0814785	8.8189289	22.9004074	33.3126977	56.2131051
2008	2.1021514	6.8622300	3.6746345	10.5368645	3.7357695	14.2726340	8.9439389	23.2165729	33.7858063	57.0023792
2009	2.1329769	6.9548884	3.7283684	10.6832568	3.7913689	14.4746257	9.0774682	23.5520939	34.2922177	57.8443116
2010	2.0528837	6.7136141	3.5883934	10.3020075	3.6496819	13.9516894	8.7384775	22.6901669	33.0130163	55.7031832
2011	2.1856011	7.1131392	3.8202429	10.9333821	3.8860876	14.8194697	9.3047281	24.1241978	35.1533520	59.2775498
2012	2.2098631	7.1866333	3.8625888	11.0492221	3.9296388	14.9788609	9.4091695	24.3880304	35.5488833	59.9369137
2013	2.3742722	7.6809275	4.1494715	11.8303990	4.2222894	16.0526884	10.1101369	26.1628253	38.1988455	64.3616708
2014	2.6293085	8.4500084	4.5953775	13.0453859	4.6767409	17.7221268	11.1985920	28.9207188	42.3128081	71.2335269
2015	2.6214349	8.4270121	4.5817568	13.0087689	4.6629606	17.6717295	11.1656834	28.8374129	42.1885260	71.0259389
2016	2.5593402	8.2385540	4.4728885	12.7114425	4.5535504	17.2649929	10.9041492	28.1691421	41.2031313	69.3722734
2017	2.5998545	8.3607846	4.5437332	12.9045178	4.6260101	17.5305279	11.0777629	28.6082908	41.8599120	70.4682028
2018	2.7926198	8.9414884	4.8804371	13.8219255	4.9691037	18.7910292	11.8995169	30.6905461	44.9656872	75.6562333
2019	2.6761923	8.5906488	4.6769801	13.2676289	4.7633426	18.0309715	11.4072746	29.4382461	43.1083941	72.5466402
2020	2.6297770	8.4513798	4.5959024	13.0472822	4.6805352	17.7278174	11.2088895	28.9367069	42.3582449	71.2949518
2021	2.5454414	8.1962570	4.4484617	12.6447187	4.5300777	17.1747964	10.8484524	28.0232488	40.9955124	69.0187612
2022	2.7722704	8.8797784	4.8446393	13.7244177	4.9342087	18.6586264	11.8165485	30.4751749	44.6552558	75.1304307
2023	2.5432218	8.1900519	4.4445162	12.6345681	4.5268749	17.1614430	10.8410076	28.0024506	40.9689446	68.9713952
2024	2.6573574	8.5338698	4.6438481	13.1777179	4.7300936	17.9078115	11.3277894	29.2356009	42.8089399	72.0445408
2025	2.6274046	8.4430041	4.5915332	13.0345373	4.6755746	17.7101119	11.1967967	28.9069086	42.3114164	71.2183250
2026	2.6739301	8.5832975	4.6727605	13.2560580	4.7600980	18.0161560	11.3999328	29.4160888	43.0826683	72.4987571
2027	2.6052213	8.3776622	4.5532312	12.9308934	4.6350504	17.5659438	11.0992318	28.6651756	41.9397481	70.6049237
2028	2.7203654	8.7238905	4.7540887	13.4779792	4.8437467	18.3217259	11.6004904	29.9222163	43.8423112	73.7645275
2029	2.5912076	8.3338110	4.5282847	12.8620957	4.6114242	17.4735199	11.0432411	28.5167610	41.7316870	70.2484480
2030	2.5304812	8.1513557	4.4222738	12.5736295	4.5042883	17.0779178	10.7870615	27.8649793	40.7653482	68.6303275
2031	2.7549244	8.8286445	4.8148077	13.6434522	4.9018843	18.5453365	11.7384184	30.2837549	44.3561544	74.6399093
2032	2.7335615	8.7635614	4.7770647	13.5406261	4.8673991	18.4080252	11.6571664	30.0651916	44.0569595	74.1221511
2033	2.5047243	8.0733854	4.3772603	12.4506457	4.4575003	16.9081460	10.6746156	27.5827616	40.3384889	67.9212505
2034	2.6484779	8.5071363	4.6285436	13.1356799	4.7137901	17.8494700	11.2885668	29.1380368	42.6593688	71.7974056
2035	2.7246639	8.7362640	4.7614305	13.4976945	4.8507986	18.3484931	11.6172577	29.9657508	43.9047186	73.8704694

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

Calendar Year	California Aqueduct (continued)									
	Reach 18A		Reach 22B		Reach 23		Reach 26A		Reach 29A	
	Alamo Powerplant		Pearblossom Pumping Plant		Mojave Siphon Powerplant		Devil Canyon Powerplant		Oso Pumping Plant	
	Unit Rate (21)	Cumulative Unit Rate (22)	Unit Rate (23)	Cumulative Unit Rate (24)	Unit Rate (25)	Cumulative Unit Rate (26)	Unit Rate (27)	Cumulative Unit Rate (28)	Unit Rate (29)	Cumulative Unit Rate (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	13.3055758	14.2519509	27.5575267	0	27.5575267	-2.3717647	25.1857620	1.4212193	14.7267951
1973	0	13.2974148	4.4326545	17.7300693	0	17.7300693	-8.4298618	9.3002075	1.0210537	14.3184685
1974	0	12.3350425	3.4431782	15.7782207	0	15.7782207	-5.1043660	10.6738547	0.9241725	13.2592150
1975	0	12.2949125	3.1739313	15.4688438	0	15.4688438	-5.6510611	9.8177827	0.9362286	13.2311411
1976	0	13.8647518	3.9391330	17.8038848	0	17.8038848	-6.4449941	11.3588907	0.8622774	14.7270292
1977	0	17.7840870	3.4988957	21.2829827	0	21.2829827	-11.6274558	9.6555269	0.9076172	18.6917042
1978	0	13.1993637	4.1619043	17.3612680	0	17.3612680	-8.1314274	9.2298406	0.7314697	13.9308334
1979	0	17.6035853	5.2283922	22.8319775	0	22.8319775	-9.5825772	13.2494003	0.9509677	18.5545530
1980	0	19.3061659	4.4253989	23.7315648	0	23.7315648	-11.5446606	12.1869042	1.4272378	20.7334037
1981	0	18.7632655	4.0325337	22.7957992	0	22.7957992	-6.7528607	16.0429385	1.5690769	20.3323424
1982	0	18.3851740	3.7143664	22.0995404	0	22.0995404	-6.9141441	15.1853963	1.4949290	19.8801030
1983	0	10.2397399	1.7592652	11.9990051	0	11.9990051	-23.7923414	-11.7933363	1.2824635	11.5222034
1984	0	15.0257977	2.5203002	17.5460979	0	17.5460979	-29.2940447	-11.7479468	1.7818310	16.8076287
1985	0	20.9739616	3.5406919	24.5146535	0	24.5146535	-30.7672356	-6.2525821	2.1691578	23.1431194
1986	-2.3583180	34.1758985	6.0306655	40.2065640	0	40.2065640	-29.2499580	10.9566060	3.2296473	39.7638638
1987	-2.5482255	29.4907224	5.0997322	34.5904546	0	34.5904546	-29.7006533	4.8898013	3.1281318	35.1670797
1988	-1.3847067	28.6841141	4.7880132	33.4721273	0	33.4721273	-29.0334518	4.4386755	2.9887414	33.0575622
1989	-1.1019487	38.4996363	6.4559997	44.9556360	0	44.9556360	-28.3706997	16.5849363	3.5266078	43.1281928
1990	-1.0673268	51.9071913	9.0317647	60.9389560	0	60.9389560	-28.8797266	32.0592294	3.6820302	56.6565483
1991	-1.5206590	34.1859899	6.1338271	40.3198170	0	40.3198170	-30.3294563	9.9903607	2.1966277	37.9032766
1992	-2.6080003	19.5839837	3.6796265	23.2636102	0	23.2636102	-29.7938993	-6.5302891	1.9058052	24.0977892
1993	-0.1885524	-4.2578449	-0.9592579	-5.2171028	0	-5.2171028	-30.6629489	-35.8800517	0.1578038	-3.9114887
1994	-0.1279266	37.6304211	6.5139903	44.1444114	0	44.1444114	-30.4781656	13.6662458	3.0574815	40.8158292
1995	-3.4425314	16.2738280	3.4305039	19.7043319	0	19.7043319	-30.3517624	-10.6474305	1.5732257	21.2895851
1996	-5.9839345	33.6181295	6.7319046	40.3500341	-2.3423415	38.0076926	-29.5900574	8.4176352	3.1331651	42.7352291
1997	-4.7529315	34.1852209	6.8987280	41.0839489	-3.8541559	37.2297930	-30.6066647	6.6231283	2.7945930	41.7327454
1998	-4.8787922	-10.9027448	-1.3199769	-12.2227217	-3.6426234	-15.8653451	-29.8601042	-45.7254493	-0.3411084	-6.3650610
1999	-6.6806336	69.1816209	15.0819466	84.2635675	11.2428354	73.0207321	-46.7431123	26.2776198	4.7549010	80.6171555
2000	-3.9495963	57.6059713	11.2173896	68.8233609	-6.7037394	62.1196215	-27.9312781	34.1883434	4.2101298	65.7656974
2001	-3.8875802	61.3298898	11.8902595	73.2201493	-6.7155324	66.5046169	-27.9344110	38.5702059	4.4560521	69.6735221
2002	-4.1439030	53.5750462	10.8906270	64.4656732	-5.9298164	58.5358568	-28.3189808	30.2168760	3.7816186	61.5005678
2003	-3.9806850	58.5609011	11.7969731	70.3578742	-5.9430889	64.4147853	-28.2962642	36.1185211	4.0957840	66.6373701
2004	-4.2540090	58.8052363	11.8827055	70.6879418	-6.1020410	64.5859008	-28.4714005	36.1145003	4.2223973	67.2816426
2005	-4.2728259	56.2938148	11.3973902	67.6912050	-6.0562534	61.6349516	-28.4328377	33.2021139	4.0651906	64.6318313
2006	-4.2626457	50.7076490	10.3422865	61.0499355	-5.7529268	55.2970087	-28.5808989	26.7161098	3.6793664	58.6496611
2007	-4.2722770	51.9408281	10.5705992	62.5114273	-6.1183466	56.3930807	-28.3344562	28.0586245	3.7685778	59.9816829
2008	-4.2833541	52.7190251	10.7190624	63.4380875	-6.0573478	57.3807397	-28.2370700	29.1436697	3.8253273	60.8277065
2009	-4.2728202	53.5714914	10.8757798	64.4472712	-6.2309450	58.2163262	-28.2224235	29.9939027	3.8844130	61.7287246
2010	-4.2483289	51.4548543	10.4674808	61.9223351	-6.0383089	55.8840262	-28.2433797	27.6406465	3.7402921	59.4434753
2011	-4.2534354	55.0241144	11.1438485	66.1679629	-6.0601222	60.1078407	-28.2364611	31.8713796	3.9853382	63.2628880
2012	-4.2180954	55.7188183	11.2673273	66.9861456	-6.0575602	60.9285854	-28.2756938	32.6528916	4.0305594	63.9674731
2013	-4.1950356	60.1666352	12.1042369	72.2708721	-6.0379301	66.2329420	-28.2432930	37.9896490	4.3346545	68.6963253
2014	-4.2506821	66.9828448	13.4049507	80.3877955	-6.4284603	73.9593352	-28.0702477	45.8890875	4.8007543	76.0342812
2015	-4.2068389	66.8191000	13.3651854	80.1842854	-6.1930207	73.9912647	-28.0976251	45.8936396	4.7883462	75.8142851
2016	-4.1607545	65.2115189	13.0476703	78.2591892	-6.4187728	71.8404164	-28.0628659	43.7775505	4.6799154	74.0521888
2017	-4.1425358	66.3256670	13.2542259	79.5798929	-6.1734595	73.4064334	-28.1546895	45.2517439	4.7554602	75.2236630
2018	-4.1774259	71.4788074	14.2364541	85.7152615	-5.8815400	79.8337215	-28.2530464	51.5806751	5.1095938	80.7658271
2019	-4.1063591	68.4402811	13.6430162	82.0832973	-6.1050596	75.9782377	-28.1994776	47.7787601	4.9014557	77.4480959
2020	-4.1363813	67.1585705	13.4064695	80.5650400	-6.0435154	74.5215246	-28.0156112	46.5059134	4.8179934	76.1129452
2021	-4.1301703	64.8885909	12.9763935	77.8649844	-5.8660916	71.9988928	-28.0440820	43.9548108	4.6611486	73.6799098
2022	-4.0588586	71.0715721	14.1320857	85.2036578	-6.0421367	79.1615211	-27.9918122	51.1697089	5.0764106	80.2068413
2023	-4.0959821	64.8754131	12.9648499	77.8402630	-6.1466653	71.6935977	-27.9138072	43.7797905	4.6587783	73.6301735
2024	-4.0842944	67.9602464	13.5463171	81.5065635	-6.0811061	75.4254574	-27.9814318	47.4440256	4.8708520	76.9153928
2025	-4.1273062	67.0910188	13.3937773	80.4847961	-6.3346401	74.1501560	-27.8724016	46.2777544	4.8083127	76.0266377
2026	-4.0459688	68.4527883	13.6306920	82.0834803	-6.4066397	75.6768406	-27.8754205	47.8014201	4.9012353	77.3999924
2027	-4.1130120	66.4919117	13.2819723	79.7738840	-5.8637352	73.9101488	-28.0152699	45.8948789	4.7580507	75.3629744
2028	-4.1119937	69.6525338	13.8679151	83.5204489	-6.1264140	77.3940349	-27.9563242	49.4377107	4.9984986	78.7630261
2029	-4.0729642	66.1754838	13.2092522	79.3847360	-6.1967608	73.1879752	-27.9462682	45.2417070	4.7403760	74.9888240
2030	-4.0732799	64.5570476	12.9000017	77.4570493	-5.9483681	71.5086812	-28.0202917	43.4883895	4.6355328	73.2658603
2031	-4.0876452	70.5522641	14.0450285	84.5972926	-5.9504031	78.6468895	-28.0274326	50.6194569	5.0332486	79.6731579
2032	-4.1238119	69.9983392	13.9349715	83.9333107	-6.2793366	77.6539741	-27.8899949	49.7639792	5.0224745	79.1446256
2033	-4.0601195	63.8611310	12.7686477	76.6297787	-5.9743211	70.6554576	-28.0011106	42.6543470	4.5834801	72.5047306
2034	-4.1029344	67.6944712	13.5016874	81.1961586	-5.9788353	75.2173233	-27.9819900	47.2353333	4.8512213	76.6486269
2035	-3.9961620	69.8743074	13.8893624	83.7636698	-6.1779232	77.5857466	-27.9405084	49.6452382	4.9943358	78.8648052

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

Calendar Year	California Aqueduct (continued)							
	Reach 29G		Reach 29J		Reach 31A		Reach 33A	
	Warne Powerplant		Castaic Powerplant		Las Perillas and Badger Hill Pumping Plants		Devil's Den, Bluestone, and Polonio Pass Pumping Plants and San Luis Obispo Powerplant	
	Unit Rate (31)	Cumulative Unit Rate (32)	Unit Rate (33)	Cumulative Unit Rate (34)	Unit Rate (35)	Cumulative Unit Rate (36)	Unit Rate (37)	Cumulative Unit Rate (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	4.1196074	0	0
1969	0	0	0	0	1.2624065	3.0743046	0	0
1970	0	0	0	0	1.6309699	3.3613191	0	0
1971	0	0	0	0	1.4985537	2.7945171	0	0
1972	0	14.7267951	-2.9350830	11.7917121	1.9517720	3.4238559	0	0
1973	0	14.3184685	-6.8099448	7.5085237	1.5374531	3.0786506	0	0
1974	0	13.2592150	-7.4013274	5.8578876	1.5168982	2.9908236	0	0
1975	0	13.2311411	-6.5604921	6.6706490	1.1130304	2.6730490	0	0
1976	0	14.7270292	-6.7213324	8.0056968	1.5685447	3.2823187	0	0
1977	0	18.6917042	-30.4985994	-11.8068952	1.7573375	4.1425967	0	0
1978	0	13.9308334	-9.0130187	4.9178147	1.9429506	4.0166744	0	0
1979	0	18.5545530	-19.0478097	-0.4932567	1.5600341	4.3745892	0	0
1980	0	20.7334037	-7.4485479	13.2848558	1.5124754	3.6989191	0	0
1981	0	20.3323424	-10.0059379	10.3264045	1.5414199	4.7207919	0	0
1982	-2.1714430	17.7086600	-9.5987314	8.1099286	1.7581649	4.3684632	0	0
1983	-8.9130752	2.6091282	-39.8193120	-37.2101838	0.1783064	1.4038458	0	0
1984	-15.0246012	1.7830275	-17.3126964	-15.5296689	0.8560669	2.7050406	0	0
1985	-14.7115359	8.4315835	-38.9450653	-30.5134818	1.2075223	3.7042097	0	0
1986	-14.1893653	25.5744985	-28.1596224	-2.5851239	2.2635962	6.9940737	0	0
1987	-14.8696165	20.2974632	-27.0536484	-6.7561852	1.9135150	5.9684757	0	0
1988	-14.7032843	18.3542779	-25.6857024	-7.3314245	1.7733304	5.5885868	0	0
1989	-14.4231503	28.7050425	-25.3986130	3.3064295	2.4154074	7.4521721	0	0
1990	-14.1850383	42.4715100	-26.0776141	16.3938959	3.7962241	9.8455425	0	0
1991	-14.7813217	23.1219549	-25.1420394	-2.0200845	2.4124332	7.1956539	0	0
1992	-14.6199453	9.4778439	-25.1951380	-15.7172941	1.2766497	4.5348543	0	0
1993	-10.3386629	-14.2501516	-21.1218951	-35.3720467	-1.1726278	-0.7534306	0	0
1994	-14.7696788	26.0461504	-26.7435205	-0.6973701	2.3664953	7.1065726	0	0
1995	-12.2705911	9.0189940	-25.6908056	-16.6718116	2.5750190	5.4284909	0	0
1996	-14.8515762	27.8836529	-29.5639188	-1.6802659	2.5837041	7.6299316	0	0
1997	-13.7544284	27.9783170	-24.9328560	3.0454610	2.7032546	6.9990346	24.4601780	31.4592126
1998	-8.6187000	-14.9837610	-22.2638182	-37.2475792	-0.5394642	-0.6553410	-4.4783431	-5.1336841
1999	-18.6578174	61.9593381	-34.9207602	27.0385780	3.8116542	10.5418017	60.1241815	70.6659832
2000	-13.1371919	52.6285055	-23.8792853	28.7492202	4.4884384	11.9115367	33.2497659	45.1613026
2001	-13.0967793	56.5767428	-23.8737334	32.7030094	4.7577901	12.5958357	35.2450558	47.8408915
2002	-14.6527487	46.8478191	-23.8915677	22.9562515	4.8372629	11.7998471	32.6152995	44.4151466
2003	-14.8415125	51.7958576	-23.8863381	27.9095195	5.2398374	12.7397310	35.3296257	48.0693567
2004	-14.8176346	52.4640080	-23.9999492	28.4640588	5.2781683	12.8278598	35.5877479	48.4156077
2005	-14.7771922	49.8546391	-24.0597656	25.7948735	5.0625522	12.3254837	34.1342252	46.4597089
2006	-14.7929225	43.8567386	-24.0079723	19.8487663	4.5936250	11.2337478	30.9743637	42.2081115
2007	-14.8154530	45.1662299	-24.0110943	21.1551356	4.6948501	11.4689997	31.6581023	43.1271020
2008	-14.8020107	46.0256958	-24.0189999	22.0066959	4.7607759	11.6230059	32.1026871	43.7256930
2009	-14.7768554	46.9518692	-24.0275872	22.9242820	4.8303816	11.7852700	32.5720569	44.3573269
2010	-14.7513191	44.6921562	-24.0295883	20.6625679	4.6490414	11.3626555	31.3492325	42.7118880
2011	-14.7306027	48.5322853	-24.0383998	24.4938855	4.9494453	12.0625845	33.3748688	45.4374533
2012	-14.7531988	49.2142743	-24.0391614	25.1751129	5.0042890	12.1909223	33.7447153	45.9356376
2013	-14.7469471	53.9493782	-24.0538564	29.8955218	5.3759862	13.0569137	36.2511704	49.3080841
2014	-14.7323178	61.3019634	-24.0538095	37.2481539	5.9536673	14.4036757	40.1465681	54.5502438
2015	-14.7409971	61.0732880	-24.0472437	37.0260444	5.9360359	14.3630480	40.0276651	54.3907131
2016	-14.7648698	59.2873190	-24.0604588	35.2268602	5.7950213	14.0335753	39.0767670	53.1103423
2017	-14.7668491	60.4568139	-24.0637854	36.3930285	5.8867850	14.2475696	39.6954998	53.9430694
2018	-14.7815211	65.9843060	-24.0581225	41.9261835	6.3229945	15.2644829	42.6369776	57.9014605
2019	-14.8173103	62.6307856	-24.0730864	38.5576992	6.0594192	14.6500680	40.8596743	55.5097423
2020	-14.8811339	61.2318113	-24.0802813	37.1515300	5.9543984	14.4057782	40.1514485	54.5572267
2021	-14.8695770	58.8103328	-24.0531949	34.7571379	5.7633652	13.9596222	38.8633204	52.8229426
2022	-14.8438346	65.3630067	-24.0600173	41.3029894	6.2766558	15.1564342	42.3244900	57.4809242
2023	-14.8370607	58.7931128	-24.0664683	34.7266445	5.7582354	13.9482873	38.8287319	52.7770192
2024	-14.8371802	62.0782126	-24.0750582	38.0031544	6.0164860	14.5503558	40.5701416	55.1204974
2025	-14.9038553	61.1227824	-24.0679710	37.0548114	5.9487264	14.3917305	40.1132565	54.5049870
2026	-14.8510398	62.5489526	-24.0771365	38.4718161	6.0539543	14.6372518	40.8228017	55.4600535
2027	-14.7858867	60.5770877	-23.9828672	36.5942205	5.8991038	14.2767660	39.7786227	54.0553887
2028	-14.7581073	64.0049188	-24.0881925	39.9167263	6.1593162	14.8832067	41.5332690	56.4164757
2029	-14.9302681	60.0585559	-24.0696491	35.9889068	5.8667654	14.2005764	39.5605510	53.7611274
2030	-14.8420384	58.4238219	-24.0533602	34.3704617	5.7294184	13.8807741	38.6343955	52.5151696
2031	-14.7682866	64.9048713	-23.9786834	40.9261879	6.2379751	15.0666196	42.0636864	57.1303060
2032	-14.7508859	64.3937397	-24.0869698	40.3067699	6.1890958	14.9526572	41.7340607	56.6867179
2033	-14.9144201	57.5903105	-24.0534470	33.5368635	5.6710958	13.7444812	38.2410691	51.9855503
2034	-14.8323704	61.8162565	-24.0587929	37.7574636	5.9966675	14.5038038	40.4364697	54.9402735
2035	-14.8624626	64.0023426	-24.0800354	39.9223072	6.1688386	14.9051026	41.5974662	56.5025688

Table B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County Fc&wcd (9)	Total (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	19,958	53,785	163,255	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	74,960	40,012	653,290	768,262	0	0	0
1979	16,237	0	16,237	137,294	77,255	653,550	868,099	0	0	0
1980	19,945	0	19,945	98,994	65,057	518,850	682,901	0	0	0
1981	23,842	0	23,842	126,674	141,722	569,034	837,430	0	0	0
1982	12,157	0	12,157	97,269	46,815	652,266	796,350	0	0	0
1983	2,342	0	2,342	8,222	5,446	149,670	163,338	0	0	0
1984	4,830	0	4,830	26,842	13,208	351,060	391,110	0	0	0
1985	10,186	0	10,186	80,075	103,058	467,533	650,666	0	0	0
1986	15,500	0	15,500	112,516	131,287	933,298	1,177,101	0	0	0
1987	27,223	0	27,223	216,551	234,657	813,909	1,265,117	0	0	0
1988	31,276	11,575	42,851	227,709	294,711	773,182	1,295,602	0	0	0
1989	37,864	67,236	105,100	306,889	304,630	1,052,786	1,664,305	0	0	0
1990	54,735	105,418	160,153	524,597	503,033	1,457,424	2,485,054	0	0	0
1991	6,974	18,823	25,797	106,008	142,470	317,653	566,131	0	(2,505)	(2,505)
1992	12,344	23,551	35,895	94,055	122,806	274,675	491,536	0	0	0
1993	(7,225)	(17,291)	(24,516)	(35,595)	(12,738)	(76,978)	(125,311)	0	0	0
1994	39,026	77,284	116,310	232,182	257,960	643,069	1,133,211	0	0	0
1995	15,701	36,725	52,426	161,234	93,948	151,833	407,015	0	0	0
1996	31,526	96,570	128,096	215,289	187,161	737,690	1,140,140	505	0	505
1997	29,693	116,558	146,251	352,312	220,936	917,305	1,490,553	35,004	234,025	269,029
1998	(1,077)	(26,967)	(28,044)	(10,818)	(20,527)	(76,645)	(107,990)	(18,441)	(95,579)	(114,020)
1999	145,213	255,272	400,485	855,222	730,562	1,259,839	2,845,623	271,075	1,919,783	2,190,858
2000	154,964	208,273	363,237	871,192	709,068	1,893,897	3,474,157	1,129,033	2,054,207	3,183,240
2001	170,389	223,429	393,818	921,194	749,681	2,002,593	3,673,468	1,196,022	2,176,091	3,372,113
2002	205,801	234,465	440,266	773,604	632,423	1,681,747	3,087,774	1,110,379	2,020,269	3,130,648
2003	226,912	256,730	483,642	835,404	709,242	1,816,096	3,360,742	1,201,734	2,186,482	3,388,216
2004	234,026	284,894	518,920	841,147	768,004	1,828,582	3,437,733	1,210,390	2,202,232	3,412,622
2005	228,366	274,719	503,085	807,768	737,527	1,756,017	3,301,312	1,161,494	2,113,266	3,274,760
2006	210,560	250,208	460,768	735,283	671,346	1,598,442	3,005,071	1,055,203	1,919,879	2,975,082
2007	217,726	257,475	475,201	750,924	685,627	1,632,445	3,068,996	1,078,178	1,961,679	3,039,857
2008	223,878	262,467	486,345	761,143	694,956	1,654,660	3,110,759	1,093,142	1,988,907	3,082,049
2009	230,204	267,756	497,960	771,914	704,791	1,678,073	3,154,778	1,108,933	2,017,638	3,126,571
2010	224,570	259,091	483,661	743,848	679,166	1,617,061	3,040,075	1,067,797	1,942,792	3,010,589
2011	241,828	277,794	519,622	790,332	721,608	1,718,114	3,230,054	1,135,936	2,066,767	3,202,703
2012	247,777	282,397	530,174	798,842	729,378	1,736,615	3,264,835	1,148,391	2,089,428	3,237,819
2013	268,041	305,747	573,788	856,349	781,885	1,861,629	3,499,863	1,232,702	2,242,828	3,475,530
2014	301,190	340,821	642,011	945,784	863,541	2,056,052	3,865,377	1,363,756	2,481,273	3,845,029
2015	311,361	340,495	651,856	943,081	861,073	2,050,174	3,854,328	1,359,768	2,474,016	3,833,784
2016	314,036	332,890	646,926	921,208	841,103	2,002,624	3,764,935	1,327,759	2,415,777	3,743,536
2017	329,288	338,639	667,927	935,417	854,076	2,033,514	3,823,007	1,348,576	2,453,655	3,802,231
2018	365,325	364,211	729,536	1,002,940	915,727	2,180,305	4,098,972	1,447,536	2,633,706	4,081,242
2019	361,410	349,477	710,887	962,140	878,475	2,091,609	3,932,224	1,387,743	2,524,916	3,912,659
2020	365,799	344,023	709,822	945,908	863,654	2,056,320	3,865,882	1,363,930	2,481,590	3,845,520
2021	355,798	333,140	688,938	916,297	836,618	1,991,949	3,744,864	1,320,573	2,402,704	3,723,277
2022	387,485	362,810	750,295	995,760	909,172	2,164,695	4,069,627	1,437,023	2,614,577	4,051,600
2023	355,481	332,844	688,325	915,529	835,918	1,990,281	3,741,728	1,319,426	2,400,616	3,720,042
2024	371,424	347,773	719,197	955,506	872,418	2,077,185	3,905,109	1,378,013	2,507,211	3,885,224
2025	367,241	343,856	711,097	944,987	862,813	2,054,318	3,862,118	1,362,624	2,479,214	3,841,838
2026	373,737	349,937	723,674	961,284	877,693	2,089,747	3,928,724	1,386,501	2,522,655	3,909,156
2027	364,178	340,987	705,165	937,349	855,841	2,037,717	3,830,907	1,351,386	2,458,763	3,810,149
2028	380,242	356,028	736,270	977,613	892,604	2,125,247	3,995,464	1,410,412	2,566,160	3,976,572
2029	362,181	339,118	701,299	932,294	851,224	2,026,726	3,810,244	1,344,028	2,445,379	3,789,407
2030	353,702	331,178	684,880	911,053	831,831	1,980,549	3,723,433	1,312,879	2,388,704	3,701,583
2031	385,097	360,575	745,672	989,801	903,731	2,151,741	4,045,273	1,428,257	2,598,629	4,026,886
2032	382,080	357,751	739,831	982,223	896,812	2,135,267	4,014,302	1,417,168	2,578,452	3,995,620
2033	350,102	327,806	677,908	902,008	823,573	1,960,889	3,686,470	1,299,639	2,364,614	3,664,253
2034	370,201	346,627	716,828	952,426	869,607	2,070,492	3,892,525	1,373,507	2,499,013	3,872,520
2035	380,829	356,578	737,407	979,069	893,932	2,128,412	4,001,413	1,412,565	2,570,076	3,982,641
Total	11,667,606	12,007,763	23,675,369	36,663,982	33,640,233	88,095,952	158,400,167	46,370,546	85,899,889	132,270,435

Note: B-18 includes Extra Peaking Charges for additional power shown in Table 8.

Table B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (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	69,014	5,179	0	0	441,098	2,356	4,760	65,715	588,122
1969	56,848	101	0	0	321,722	182	3,338	17,980	400,171
1970	69,919	6,821	0	0	471,372	0	5,595	16,573	570,280
1971	53,203	7,763	0	0	770,076	4,795	6,353	158,736	1,000,926
1972	62,479	8,530	0	0	1,153,255	2,061	7,375	380,387	1,614,087
1973	33,995	4,624	0	0	771,199	2,312	3,017	77,775	892,922
1974	49,215	4,422	0	46,826	678,702	2,211	3,114	106,549	891,039
1975	63,266	4,680	0	34,629	849,586	2,496	3,920	134,564	1,093,141
1976	70,986	5,141	0	94,809	968,207	2,742	4,910	100,789	1,247,584
1977	26,603	1,761	0	84,973	499,216	3,649	2,602	43,128	661,932
1978	109,344	942	0	191,448	1,621,753	4,335	6,312	24,994	1,959,128
1979	108,484	4,894	0	195,016	2,381,281	5,629	13,233	436,596	3,145,133
1980	89,644	1,954	0	122,712	1,745,215	4,810	7,851	151,398	2,123,584
1981	130,354	18,628	0	264,425	2,409,265	7,312	8,956	265,281	3,104,221
1982	109,196	942	0	147,173	2,385,804	4,568	6,808	48,424	2,702,915
1983	62,024	0	0	14,117	938,951	5,705	3,273	1,233	1,025,303
1984	83,388	0	0	218,455	2,014,836	6,013	7,562	10,619	2,340,873
1985	115,474	13,039	0	244,440	2,584,623	8,488	8,892	274,114	3,249,070
1986	237,702	5,535	0	379,314	4,893,657	17,502	16,998	377,606	5,928,314
1987	188,009	10,323	0	506,573	4,248,719	16,219	15,611	377,451	5,362,905
1988	207,593	15,807	0	511,443	4,196,851	15,261	11,610	368,121	5,326,686
1989	286,454	15,514	0	683,979	6,180,757	20,147	21,786	652,284	7,860,921
1990	219,567	7,737	0	847,304	4,791,649	12,099	12,117	345,235	6,235,708
1991	4,434	1,057	0	186,725	48,299	0	525	10,427	251,467
1992	77,447	4,443	0	226,503	1,711,331	6,537	5,266	152,249	2,183,776
1993	21,219	4,906	0	78,987	367,826	2,181	1,561	126,753	603,433
1994	136,481	7,904	0	474,082	3,435,587	10,030	10,167	295,601	4,369,852
1995	183,363	4,654	0	413,409	3,465,650	11,724	10,590	290,680	4,380,070
1996	287,706	9,631	0	719,500	6,360,976	21,154	16,508	1,203,135	8,618,610
1997	315,091	0	0	773,871	5,638,978	0	15,767	96,092	6,839,799
1998	(6,449)	(62)	0	57,309	(6,430)	(1)	1,122	(2,406)	43,083
1999	443,092	21,375	0	1,165,073	8,650,869	26,921	27,337	1,903,683	12,238,350
2000	396,171	22,269	0	984,121	8,211,946	29,692	29,886	879,637	10,553,722
2001	418,317	23,514	0	1,039,452	8,676,384	31,352	31,501	928,808	11,149,328
2002	371,593	20,887	0	919,570	7,746,712	27,850	27,520	825,066	9,939,198
2003	400,269	22,500	0	1,119,735	8,224,006	29,999	29,568	888,737	10,714,814
2004	402,927	22,649	0	1,092,262	8,420,047	30,199	29,753	894,639	10,892,476
2005	387,623	21,788	0	1,050,616	8,096,178	29,052	28,658	860,657	10,474,572
2006	354,383	19,921	0	959,987	7,391,639	26,561	26,289	786,854	9,565,634
2007	361,536	20,322	0	979,531	7,543,576	27,097	26,797	802,736	9,761,595
2008	366,237	20,586	0	992,345	7,643,119	27,449	27,132	813,174	9,890,042
2009	371,182	20,865	0	1,005,836	7,747,959	27,820	27,485	824,155	10,025,302
2010	358,305	20,141	0	970,754	7,475,230	26,855	26,566	795,564	9,673,415
2011	379,629	21,340	0	1,028,876	7,927,029	28,452	28,087	842,907	10,256,320
2012	383,550	21,560	0	1,039,567	8,010,056	28,746	28,368	851,616	10,363,463
2013	409,931	23,043	0	1,111,478	8,569,050	30,724	30,248	910,190	11,084,664
2014	450,977	25,350	0	1,223,348	9,438,580	33,800	33,178	1,001,326	12,206,559
2015	449,750	25,281	0	1,219,999	9,412,484	33,708	33,092	998,601	12,172,915
2016	439,692	24,716	0	1,192,617	9,199,704	32,954	32,372	976,269	11,898,324
2017	446,215	25,083	0	1,210,401	9,337,913	33,443	32,837	990,753	12,076,645
2018	477,207	26,825	0	1,294,871	9,994,465	35,765	35,049	1,059,566	12,923,748
2019	458,483	25,772	0	1,243,861	9,597,931	34,363	33,712	1,017,992	12,412,114
2020	451,050	25,354	0	1,223,594	9,440,333	33,805	33,183	1,001,489	12,208,808
2021	437,434	24,588	0	1,186,490	9,152,049	32,785	32,210	971,257	11,836,813
2022	473,914	26,640	0	1,285,920	9,924,837	35,519	34,813	1,052,254	12,833,897
2023	437,103	24,570	0	1,185,593	9,144,974	32,760	32,187	970,521	11,827,708
2024	455,452	25,602	0	1,235,606	9,533,701	34,135	33,496	1,011,264	12,329,256
2025	450,604	25,329	0	1,222,377	9,431,000	33,772	33,149	1,000,496	12,196,727
2026	458,091	25,750	0	1,242,810	9,589,733	34,333	33,683	1,017,121	12,401,521
2027	447,116	25,133	0	1,212,842	9,356,830	33,511	32,903	992,753	12,101,088
2028	465,594	26,172	0	1,263,268	9,748,688	34,895	34,220	1,033,781	12,606,618
2029	444,776	25,002	0	1,206,500	9,307,593	33,335	32,733	987,557	12,037,496
2030	435,038	24,454	0	1,179,971	9,101,306	32,605	32,039	965,936	11,771,349
2031	471,184	26,486	0	1,278,447	9,866,775	35,315	34,620	1,046,195	12,759,022
2032	467,711	26,291	0	1,269,042	9,793,553	35,054	34,371	1,038,482	12,664,504
2033	430,876	24,220	0	1,168,617	9,013,140	32,294	31,741	956,696	11,657,584
2034	454,026	25,521	0	1,231,710	9,503,488	34,029	33,394	1,008,096	12,290,264
2035	466,254	26,209	0	1,265,064	9,762,703	34,945	34,266	1,035,248	12,624,689
Total	19,295,345	1,059,978	0	50,020,173	397,325,591	1,378,411	1,405,942	42,550,159	513,035,599

Table B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (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	30,412	0	0	0	0	0	0	0	0
1969	0	30,649	0	0	0	0	0	0	0	0
1970	0	39,458	0	0	0	0	0	0	0	0
1971	0	34,903	0	0	0	0	0	0	0	0
1972	780	47,609	0	12,787	0	4,497	1,516	0	32,111	0
1973	286	28,995	102,834	6,896	159,570	3,856	0	0	301,568	0
1974	15,563	29,011	100,979	9,894	157,782	4,934	221	0	177,239	6,532
1975	99,220	28,601	108,282	12,762	170,156	6,393	0	0	136,124	53,508
1976	385,211	38,403	135,309	17,840	213,647	8,166	0	0	139,409	68,960
1977	199,219	21,023	0	23,604	0	1,974	1,702	0	239,775	86,861
1978	584,845	45,638	175,072	20,991	265,626	2,745	0	0	37,428	71,725
1979	1,064,893	84,204	229,758	28,769	342,479	2,341	91,329	0	239	3,841
1980	1,397,902	67,423	258,294	29,404	403,436	3,687	94,926	0	0	13,223
1981	1,489,335	119,445	275,943	33,851	433,121	24,005	91,182	0	257,024	58,059
1982	929,281	133,782	294,499	27,360	464,091	0	232,046	0	127,694	191,743
1983	337,512	(334,464)	174,548	10,931	275,977	390	0	0	(70,690)	(8,657)
1984	490,772	(140,863)	276,667	19,790	438,651	15	0	0	(65,271)	(89,943)
1985	826,146	(333,324)	416,480	34,861	661,896	0	0	32,677	(46,205)	(31,437)
1986	1,113,586	57,024	732,161	60,552	1,165,990	5,570	0	105,809	70,352	103,584
1987	1,024,753	(37,290)	672,127	63,957	1,089,599	32,663	588	158,631	91,689	51,977
1988	1,022,049	(73,509)	691,265	67,145	1,138,051	12,019	303	50,770	94,925	39,718
1989	1,743,838	181,993	983,314	97,555	1,640,881	38,419	8,992	352,334	344,668	212,935
1990	2,450,421	426,349	1,407,690	111,337	2,321,774	90,758	0	447,787	603,708	533,754
1991	288,894	(2,618)	279,415	34,231	460,856	17,844	129,482	133,805	36,576	53,940
1992	592,709	(205,039)	242,568	12,073	400,066	4,916	243,776	79,022	(21,930)	(51,642)
1993	(183,521)	(486,535)	(803,846)	(2,291)	(1,325,875)	(3,126)	(58,617)	(28,189)	(156,473)	(516,565)
1994	1,849,649	68,959	192,721	34,653	317,836	41,375	734,810	316,773	124,841	208,138
1995	769,524	(244,351)	(245,956)	8,058	(405,668)	7,810	167,652	115,567	(7,411)	(137,586)
1996	1,894,582	76,219	523,736	18,435	863,836	16,607	290,821	387,989	51,045	137,821
1997	2,133,002	103,648	343,435	24,237	359,137	15,178	560,798	440,337	63,939	120,375
1998	(591,671)	(737,038)	(4,040,621)	(2,968)	(3,108,827)	(4,405)	(70,644)	(84,367)	(85,873)	(425,705)
1999	5,316,469	708,514	607,014	143,268	1,001,176	148,534	451,023	850,933	487,529	472,996
2000	7,972,666	2,523,087	789,750	360,293	1,302,575	132,494	1,359,642	996,584	3,507,723	984,624
2001	8,488,056	2,857,966	890,971	385,727	1,469,525	141,060	1,446,566	1,061,007	3,957,302	1,110,822
2002	7,414,786	2,043,748	698,009	339,508	1,151,263	123,223	1,272,977	926,846	3,100,252	870,247
2003	8,104,828	2,464,330	834,337	373,605	1,376,114	134,690	1,741,252	1,013,104	3,705,759	1,040,213
2004	8,138,644	2,511,199	834,244	374,600	1,375,962	135,252	1,749,374	1,017,331	3,705,348	1,040,098
2005	7,791,064	2,329,330	766,970	357,483	1,265,001	129,477	2,013,640	973,883	3,406,536	956,221
2006	7,017,938	1,847,414	617,141	320,724	1,017,883	116,627	2,121,234	877,242	2,741,074	769,425
2007	7,188,610	2,013,969	648,153	327,081	1,069,033	119,465	2,484,602	898,577	2,878,815	808,088
2008	7,296,313	2,095,037	673,219	332,808	1,110,374	121,253	2,838,636	912,038	2,990,141	839,335
2009	7,414,295	2,182,391	692,860	337,656	1,142,768	123,214	3,206,049	926,787	3,077,374	863,824
2010	7,121,351	1,967,077	638,501	324,127	1,053,109	118,346	3,390,028	890,169	2,835,930	796,051
2011	7,615,338	2,331,819	736,229	348,623	1,214,299	126,556	3,953,362	951,917	3,270,004	917,895
2012	7,711,484	2,396,671	754,281	353,385	1,244,075	128,153	4,337,198	963,937	3,350,187	940,404
2013	8,327,062	2,846,055	877,562	384,152	1,447,406	138,382	5,040,805	1,040,883	3,897,738	1,094,103
2014	9,270,426	3,546,025	1,060,037	428,964	1,748,376	154,060	6,073,288	1,158,804	4,708,222	1,321,605
2015	9,247,764	3,524,880	1,060,143	429,147	1,748,548	153,684	6,057,921	1,155,969	4,708,687	1,321,737
2016	9,025,274	3,353,596	1,011,262	416,674	1,667,924	149,986	5,912,475	1,128,159	4,491,576	1,260,791
2017	9,179,473	3,464,616	1,045,315	425,757	1,724,090	152,550	6,012,275	1,147,433	4,642,829	1,303,251
2018	9,892,666	3,991,372	1,191,513	463,035	1,965,225	164,401	6,475,862	1,236,583	5,292,177	1,485,523
2019	9,472,136	3,670,694	1,103,689	440,673	1,820,371	157,412	6,201,448	1,184,017	4,902,100	1,376,028
2020	9,294,746	3,536,826	1,074,285	432,226	1,771,875	154,464	6,086,720	1,161,844	4,771,506	1,339,369
2021	8,980,581	3,308,880	1,015,356	417,594	1,674,678	149,244	5,882,701	1,122,571	4,509,764	1,265,898
2022	9,836,304	3,932,044	1,182,018	459,137	1,949,565	163,465	6,437,239	1,229,538	5,250,012	1,473,687
2023	8,978,756	3,305,977	1,011,313	415,823	1,668,010	149,213	5,880,844	1,122,345	4,491,806	1,260,859
2024	9,405,698	3,617,899	1,095,957	437,469	1,807,618	156,309	6,157,878	1,175,714	4,867,757	1,366,388
2025	9,285,398	3,527,618	1,069,016	430,070	1,763,181	154,310	6,080,656	1,160,676	4,748,098	1,332,800
2026	9,473,866	3,662,517	1,104,213	438,925	1,821,234	157,441	6,201,481	1,184,234	4,904,426	1,376,682
2027	9,202,481	3,483,770	1,060,172	428,679	1,748,594	152,931	6,026,939	1,150,310	4,708,814	1,321,771
2028	9,639,912	3,800,073	1,142,010	448,885	1,883,578	160,200	6,310,048	1,204,989	5,072,308	1,423,808
2029	9,158,687	3,426,145	1,045,084	424,491	1,723,708	152,203	5,997,549	1,144,836	4,641,799	1,302,961
2030	8,934,696	3,272,067	1,004,582	414,750	1,656,907	148,480	5,851,892	1,116,836	4,461,908	1,252,466
2031	9,764,434	3,896,172	1,169,309	456,154	1,928,603	162,269	6,391,407	1,220,554	5,193,556	1,457,839
2032	9,687,770	3,837,205	1,149,548	450,394	1,896,007	160,995	6,341,243	1,210,971	5,105,784	1,433,201
2033	8,838,381	3,192,709	985,315	409,801	1,625,130	146,882	5,789,385	1,104,799	4,376,338	1,228,445
2034	9,368,915	3,594,510	1,091,136	436,261	1,799,665	155,698	6,134,416	1,171,115	4,846,345	1,360,378
2035	9,670,603	3,800,604	1,146,805	449,996	1,891,485	160,712	6,328,453	1,208,827	5,093,603	1,429,783
Total	340,456,651	110,963,523	38,403,993	15,434,659	66,429,023	5,692,266	174,559,391	42,511,307	155,177,628	43,954,775

Table B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
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	30,412	0	0	0	0	0	1,118,175
1969	0	0	0	30,649	0	0	0	0	0	774,102
1970	0	0	0	39,458	0	0	0	0	0	1,104,466
1971	0	0	0	34,903	0	0	0	0	0	1,514,937
1972	0	848,272	0	947,572	0	0	0	0	0	3,299,808
1973	0	1,083,942	0	1,687,947	0	0	0	0	0	3,177,113
1974	0	1,873,406	0	2,375,561	0	0	0	0	0	3,929,788
1975	0	3,889,346	0	4,504,392	0	0	0	0	0	6,064,679
1976	0	5,487,960	0	6,494,905	0	0	0	0	0	8,485,681
1977	0	(795,826)	0	(221,668)	0	0	0	0	0	1,166,313
1978	0	3,740,378	0	4,944,448	0	0	0	0	0	7,693,530
1979	0	4,079,971	0	5,927,824	0	0	0	0	0	9,957,293
1980	0	6,339,053	0	8,607,348	0	0	0	0	0	11,433,778
1981	0	10,971,305	0	13,753,270	0	0	0	0	0	17,718,763
1982	0	7,781,091	0	10,181,587	0	0	0	0	0	13,693,009
1983	0	(8,948,225)	0	(8,562,678)	0	0	0	0	0	(7,371,695)
1984	0	(7,555,513)	0	(6,625,695)	0	0	0	0	0	(3,888,882)
1985	0	(15,106,481)	0	(13,545,387)	0	0	0	0	0	(9,635,465)
1986	0	1,249,551	0	4,664,179	0	0	0	0	0	11,785,094
1987	0	(2,888,764)	0	259,930	0	0	0	0	0	6,915,175
1988	0	(3,327,472)	0	(284,736)	0	0	0	0	0	6,380,403
1989	0	9,693,861	0	15,298,790	0	0	0	0	0	24,929,116
1990	0	31,026,541	205,393	39,625,512	0	0	0	0	0	48,506,427
1991	0	257,133	22,844	1,712,402	0	0	0	0	0	2,553,292
1992	0	(9,327,914)	0	(8,031,395)	0	0	0	0	0	(5,320,188)
1993	0	(21,363,410)	0	(24,928,448)	0	0	0	0	0	(24,474,842)
1994	0	4,204,845	0	8,094,600	0	0	0	0	0	13,713,973
1995	0	(4,810,383)	0	(4,782,744)	0	0	0	0	0	56,767
1996	0	1,972,189	0	6,233,280	0	0	0	0	0	16,120,631
1997	0	3,475,174	5,633	7,644,893	0	0	0	0	0	16,390,525
1998	0	(14,559,311)	(68,908)	(23,780,338)	0	0	0	0	0	(23,987,309)
1999	0	22,749,225	50,021	32,986,702	0	0	0	0	0	50,662,018
2000	34,187	49,451,558	362,711	69,777,894	0	0	0	0	0	87,352,250
2001	138,852	55,620,531	402,233	77,970,618	0	0	0	0	0	96,559,345
2002	108,782	36,843,517	304,822	55,197,980	0	0	0	0	0	71,795,866
2003	173,368	49,512,216	354,338	70,828,154	0	0	0	0	0	88,775,568
2004	173,350	51,824,950	720,481	73,600,833	0	0	0	0	0	91,862,584
2005	232,414	48,085,859	667,475	68,975,353	0	0	0	0	0	86,529,082
2006	200,370	38,554,639	548,227	56,749,938	0	0	0	0	0	72,756,493
2007	485,415	41,344,877	574,373	60,841,058	0	0	0	0	0	77,186,707
2008	504,185	43,601,189	591,454	63,905,982	0	0	0	0	0	80,475,177
2009	518,895	45,753,076	609,859	66,849,048	0	0	0	0	0	83,653,659
2010	478,183	42,369,790	564,640	62,547,302	0	0	0	0	0	78,755,042
2011	551,375	50,120,365	641,321	72,779,103	0	0	0	0	0	89,987,802
2012	564,896	52,132,582	654,948	75,532,201	0	0	0	0	0	92,928,492
2013	657,221	62,024,608	749,449	88,525,426	0	0	0	0	0	107,159,271
2014	793,883	76,965,863	896,503	108,126,056	0	0	0	0	0	128,685,032
2015	793,959	77,793,785	892,020	108,888,244	0	0	0	0	0	129,401,127
2016	757,351	75,098,766	856,119	105,129,953	0	0	0	0	0	125,183,674
2017	782,854	78,618,219	879,462	109,378,124	0	0	0	0	0	129,747,934
2018	892,345	91,191,030	990,090	125,231,822	0	0	0	0	0	147,065,320
2019	826,572	85,269,155	922,814	117,347,109	0	0	0	0	0	138,314,993
2020	804,553	83,661,240	894,738	114,984,392	0	0	0	0	0	135,614,424
2021	760,417	79,238,145	846,677	109,172,506	0	0	0	0	0	129,166,398
2022	885,236	93,083,375	977,637	126,859,257	0	0	0	0	0	148,564,676
2023	757,391	79,030,290	846,152	108,918,779	0	0	0	0	0	128,896,582
2024	820,783	86,014,044	911,736	117,835,250	0	0	0	0	0	138,674,036
2025	800,606	83,885,527	892,724	115,130,680	0	0	0	0	0	135,742,460
2026	826,965	86,843,963	921,122	118,917,069	0	0	0	0	0	139,880,144
2027	793,981	83,037,834	882,977	113,999,253	0	0	0	0	0	134,446,562
2028	855,273	89,944,409	950,091	122,835,584	0	0	0	0	0	144,150,508
2029	782,682	81,771,727	871,418	112,443,290	0	0	0	0	0	132,781,736
2030	752,348	78,379,509	838,945	108,085,386	0	0	0	0	0	127,966,631
2031	875,716	92,149,602	969,588	125,635,203	0	0	0	0	0	147,212,056
2032	860,916	90,664,337	957,882	123,756,253	0	0	0	0	0	145,170,510
2033	737,922	76,702,264	822,274	105,959,645	0	0	0	0	0	125,645,860
2034	817,172	85,557,347	906,720	117,239,678	0	0	0	0	0	138,011,815
2035	858,864	90,160,355	950,151	123,150,241	0	0	0	0	0	144,496,391
Total	22,659,282	2,544,340,487	27,839,154	3,588,422,139	0	0	0	0	0	4,415,803,709

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (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	151,050	190,362	449,124	790,536	0	0	0
1964	0	0	0	170,658	277,596	622,888	1,071,142	6,059	20,500	26,559
1965	0	0	0	245,544	404,537	1,159,913	1,809,994	11,426	31,741	43,167
1966	18,080	0	18,080	271,642	421,959	1,414,916	2,108,517	20,183	49,661	69,843
1967	41,609	0	41,609	347,458	498,700	1,688,151	2,534,309	37,976	84,159	122,136
1968	128,726	0	128,726	391,926	603,776	1,987,370	2,983,072	63,525	133,082	196,607
1969	254,848	0	254,848	446,844	539,662	2,085,483	3,071,989	118,158	235,273	353,431
1970	277,683	0	277,683	460,562	532,901	2,205,026	3,198,489	130,874	259,885	390,759
1971	227,611	0	227,611	421,472	552,450	2,172,163	3,146,085	131,691	262,454	394,145
1972	225,117	0	225,117	509,083	678,856	2,322,690	3,510,629	137,449	274,500	411,949
1973	221,231	31,399	252,630	473,599	549,729	2,340,894	3,364,222	134,245	269,336	403,581
1974	240,640	32,973	273,613	496,932	564,931	2,508,634	3,570,497	135,253	271,893	407,146
1975	237,608	36,328	273,936	545,293	606,069	2,412,201	3,563,563	151,575	302,781	454,356
1976	271,444	40,877	312,321	635,591	735,151	2,502,785	3,873,527	260,651	505,761	766,412
1977	293,781	45,140	338,921	598,834	713,898	2,478,684	3,791,416	270,379	527,189	797,568
1978	274,027	49,225	323,252	653,002	692,954	2,788,706	4,134,662	277,016	542,744	819,761
1979	289,639	53,391	343,030	716,654	736,812	2,816,801	4,270,267	274,806	541,940	816,746
1980	311,013	67,811	378,824	833,260	866,884	3,031,824	4,731,968	299,846	592,385	892,231
1981	347,960	87,485	435,445	795,637	879,981	2,920,978	4,596,596	319,026	641,832	960,858
1982	438,523	107,012	545,535	833,830	850,900	3,265,416	4,950,146	320,094	638,535	958,629
1983	354,997	151,387	506,384	844,459	900,745	3,798,680	5,543,884	349,218	689,064	1,038,282
1984	467,590	224,431	692,021	1,133,470	1,098,642	5,743,882	7,975,994	381,477	751,359	1,132,836
1985	736,438	364,602	1,101,040	1,581,133	1,792,351	6,560,738	9,934,222	427,652	838,891	1,266,543
1986	1,085,378	693,036	1,778,414	1,404,819	1,529,266	6,866,789	9,800,874	415,621	819,262	1,234,883
1987	1,774,876	1,560,480	3,335,356	1,893,942	2,012,607	6,678,979	10,585,528	415,668	869,658	1,285,326
1988	2,233,083	2,335,445	4,568,528	1,891,914	2,208,641	6,365,347	10,465,902	450,462	1,036,048	1,486,510
1989	2,398,917	3,329,116	5,728,033	1,807,811	1,873,153	5,921,345	9,602,309	444,744	1,220,757	1,665,501
1990	2,745,771	3,433,241	6,179,012	2,222,523	2,261,017	6,668,012	11,151,552	519,189	1,294,643	1,813,832
1991	2,748,849	3,684,164	6,433,013	1,398,018	1,621,432	4,529,790	7,549,240	523,225	1,536,883	2,060,108
1992	2,555,916	3,530,772	6,086,688	1,710,734	2,003,866	5,388,496	9,103,096	582,951	1,551,778	2,134,728
1993	2,595,089	3,506,875	6,101,964	2,512,498	2,012,363	6,516,618	11,041,479	643,164	1,738,936	2,382,100
1994	2,718,973	3,538,583	6,257,556	2,533,112	2,641,610	7,313,938	12,488,660	808,495	2,583,726	3,392,221
1995	2,652,979	3,514,074	6,167,053	2,659,656	2,288,059	5,892,494	10,840,209	1,065,720	5,228,110	6,293,830
1996	2,691,073	3,874,313	6,565,386	2,172,456	2,109,422	6,580,826	10,862,704	2,008,171	14,171,942	16,180,113
1997	2,642,343	3,637,501	6,279,844	2,284,103	2,011,539	6,561,580	10,857,222	3,101,537	23,613,074	26,714,611
1998	2,590,340	3,542,722	6,133,062	1,959,883	2,091,395	6,262,223	10,313,501	3,646,287	26,823,585	30,469,872
1999	3,137,192	4,603,008	7,740,200	3,474,325	3,771,041	9,366,514	16,611,880	4,136,606	29,853,351	33,989,957
2000	3,144,506	4,488,105	7,632,611	3,481,290	3,230,424	9,082,319	15,794,033	5,245,466	31,131,900	36,377,366
2001	3,103,420	4,312,909	7,416,329	3,553,780	3,292,354	9,259,000	16,105,134	5,188,958	31,694,579	36,883,537
2002	3,170,920	4,368,556	7,539,476	3,430,981	3,192,368	9,005,037	15,628,386	5,095,038	31,722,031	36,817,069
2003	3,148,111	4,326,732	7,474,843	3,318,061	3,144,057	8,759,599	15,221,717	5,100,274	31,501,515	36,601,789
2004	3,128,334	4,339,342	7,467,676	3,241,752	3,165,077	8,573,674	14,980,503	5,579,063	31,345,544	36,924,606
2005	3,136,012	4,341,583	7,477,595	3,248,454	3,171,196	8,588,228	15,007,878	5,588,429	31,362,458	36,950,886
2006	3,117,672	4,312,755	7,430,427	3,165,517	3,095,465	8,407,880	14,668,862	5,466,699	31,140,709	36,607,407
2007	3,124,125	4,316,322	7,440,447	3,168,585	3,098,268	8,414,562	14,681,415	5,471,282	31,149,098	36,620,379
2008	3,159,249	4,351,717	7,510,966	3,272,328	3,192,988	8,640,095	15,105,411	5,623,299	31,425,727	37,049,025
2009	3,166,850	4,355,218	7,522,068	3,276,644	3,196,932	8,649,484	15,123,060	5,629,651	31,437,328	37,066,978
2010	3,161,093	4,342,948	7,504,041	3,238,280	3,161,903	8,566,071	14,966,254	5,573,383	31,334,841	36,908,223
2011	3,181,431	4,364,055	7,545,486	3,280,771	3,201,016	8,661,276	15,143,063	5,631,941	31,441,664	37,073,604
2012	3,188,064	4,366,440	7,554,504	3,281,629	3,201,802	8,663,148	15,146,579	5,633,197	31,443,984	37,077,180
2013	3,110,771	4,284,192	7,394,963	2,898,433	2,847,557	7,705,320	13,451,310	5,234,558	30,718,903	35,953,460
2014	3,090,442	4,262,704	7,353,146	2,773,448	2,700,374	7,345,085	12,818,907	5,097,245	30,459,935	35,557,180
2015	3,084,013	4,244,585	7,328,598	2,677,864	2,558,690	6,850,216	12,086,770	5,007,431	30,295,041	35,302,472
2016	3,063,445	4,231,302	7,294,747	2,620,360	2,492,720	6,592,645	11,705,725	4,942,381	30,174,616	35,116,997
2017	3,052,340	4,234,244	7,286,584	2,594,121	2,466,982	6,488,849	11,549,952	4,931,775	30,153,249	35,085,025
2018	3,008,981	4,260,897	7,269,878	2,620,310	2,487,892	6,513,809	11,622,011	5,017,468	30,307,280	35,324,749
2019	2,961,098	4,245,471	7,206,569	2,541,052	2,414,908	6,322,652	11,278,612	4,953,883	30,189,954	35,143,836
2020	2,961,716	4,239,736	7,201,452	2,510,792	2,385,020	6,248,091	11,143,903	4,928,216	30,141,997	35,070,213
2021	2,946,844	4,226,179	7,173,023	2,471,260	2,348,552	6,161,761	10,981,573	4,873,688	30,041,589	34,915,276
2022	2,977,764	4,257,190	7,234,954	2,550,621	2,420,651	6,331,387	11,302,659	4,990,445	30,252,889	35,243,334
2023	2,946,514	4,196,554	7,143,068	2,475,676	2,352,142	6,166,538	10,994,356	4,881,111	30,052,893	34,934,004
2024	2,959,872	4,210,579	7,170,451	2,515,366	2,388,252	6,251,996	11,155,614	4,939,932	30,159,364	35,099,295
2025	2,940,986	4,197,681	7,138,667	2,487,143	2,361,967	6,188,653	11,037,763	4,899,509	30,085,003	34,984,512
2026	2,942,923	4,199,486	7,142,409	2,502,689	2,376,138	6,222,202	11,101,029	4,816,817	29,930,148	34,746,965
2027	2,930,242	4,185,870	7,116,112	2,476,872	2,352,380	6,164,244	10,993,496	4,779,728	29,859,046	34,638,774
2028	2,943,335	4,197,502	7,140,837	2,515,030	2,387,075	6,245,550	11,147,655	4,833,669	29,953,894	34,787,563
2029	2,921,403	4,175,667	7,097,070	2,465,798	2,342,069	6,137,469	10,945,336	4,765,702	29,826,758	34,592,460
2030	2,903,017	4,152,950	7,055,967	2,442,107	2,320,366	6,085,351	10,847,824	4,733,157	29,763,181	34,496,337
2031	2,921,520	4,163,993	7,085,513	2,514,490	2,386,382	6,242,137	11,143,009	4,844,095	29,951,132	34,795,227
2032	2,906,844	4,141,516	7,048,360	2,508,584	2,380,941	6,228,900	11,118,425	4,833,687	29,937,448	34,771,134
2033	2,846,280	4,065,850	6,912,130	2,427,468	2,306,814	6,052,005	10,786,287	4,715,058	29,724,504	34,439,562
2034	2,802,788	4,012,474	6,815,262	2,471,145	2,346,437	6,145,032	10,962,614	4,787,804	29,854,230	34,642,035
2035	2,683,750	3,882,701	6,566,451	2,490,158	2,363,731	6,185,393	11,039,282	4,825,318	29,920,192	34,745,509
Total	149,066,019	198,931,396	347,997,415	145,004,336	143,300,934	410,336,556	698,641,826	206,479,771	1,220,691,342	1,427,171,112

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (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	2,727	0	0	0	0	0	2,727
1965	0	0	6,034	73,631	0	0	0	0	79,665
1966	0	0	12,049	137,442	0	0	0	0	149,491
1967	0	0	26,278	267,828	0	0	0	0	294,106
1968	186,331	8,891	54,628	445,749	1,545,898	12,874	11,527	209,507	2,475,405
1969	181,978	7,586	87,621	525,451	2,395,178	11,487	10,527	359,230	3,579,058
1970	204,183	14,361	94,721	574,380	2,918,737	11,613	13,060	295,339	4,126,394
1971	200,728	15,326	95,741	606,287	3,828,898	16,571	14,356	450,856	5,228,763
1972	223,550	16,192	98,837	632,020	5,002,249	14,009	20,581	1,087,659	7,095,097
1973	206,325	12,258	97,599	639,660	4,935,963	14,259	11,654	411,463	6,329,181
1974	287,687	12,227	98,509	698,728	5,239,687	14,352	12,727	601,812	6,965,729
1975	355,723	13,170	106,755	716,065	6,364,103	15,363	14,410	733,370	8,318,959
1976	309,416	13,716	108,134	774,859	6,719,244	15,731	16,073	568,199	8,525,372
1977	271,230	10,819	112,603	798,375	6,894,924	17,178	13,862	514,808	8,633,799
1978	360,735	9,694	115,577	892,129	8,354,454	17,569	17,916	508,737	10,276,811
1979	391,671	13,579	114,312	897,584	9,487,396	18,856	24,889	960,073	11,908,360
1980	413,507	11,925	126,008	890,427	10,050,851	19,419	24,262	730,441	12,266,840
1981	476,771	29,841	134,233	1,081,117	11,496,203	23,582	22,920	915,310	14,179,977
1982	471,246	12,900	135,118	1,007,046	12,330,668	21,588	22,374	751,886	14,752,826
1983	644,650	14,491	149,260	1,027,866	15,540,914	38,621	30,830	428,746	17,875,378
1984	915,464	14,773	164,496	2,062,018	23,642,998	52,960	59,631	783,363	27,695,703
1985	1,115,293	87,980	186,413	2,373,876	28,196,017	68,568	70,829	2,193,066	34,292,042
1986	1,271,020	33,941	180,514	2,367,158	30,566,426	79,431	76,024	2,190,666	36,765,180
1987	1,129,741	50,765	179,952	2,807,672	29,357,056	76,684	74,279	2,250,235	35,926,384
1988	1,134,095	62,429	193,798	2,737,396	29,201,610	72,486	59,753	2,200,012	35,661,579
1989	1,151,622	49,262	188,063	2,439,175	29,344,380	65,702	68,630	2,452,844	35,759,678
1990	1,030,457	34,361	221,272	2,541,968	27,438,373	49,636	48,981	1,877,750	33,242,798
1991	614,020	23,268	220,289	2,057,995	17,641,726	26,467	26,728	1,237,897	21,848,390
1992	960,825	39,654	241,507	2,369,291	25,945,780	54,798	50,827	1,916,272	31,578,954
1993	1,173,899	53,700	265,128	2,801,027	31,482,476	71,500	69,568	2,651,995	38,569,293
1994	1,028,087	43,782	306,244	2,810,892	29,331,699	58,980	57,278	2,125,698	35,762,660
1995	1,522,422	46,473	304,150	3,499,829	36,425,991	87,244	79,710	2,774,286	44,740,105
1996	1,333,168	47,252	387,874	3,287,880	36,180,393	82,597	72,133	4,226,244	45,617,541
1997	1,404,428	25,210	279,602	3,223,793	32,992,170	34,762	68,633	1,672,496	39,701,094
1998	1,257,702	34,800	354,784	2,779,014	30,030,683	40,268	61,691	1,826,722	36,385,664
1999	1,664,988	73,125	394,144	4,333,400	40,008,160	95,062	93,837	5,555,066	52,217,782
2000	1,426,571	67,103	382,333	3,667,091	35,420,424	90,689	88,330	3,102,199	44,244,740
2001	1,435,264	67,629	365,752	3,708,743	35,233,141	92,400	88,768	3,123,767	44,115,464
2002	1,377,426	64,525	370,384	3,607,106	34,225,205	89,376	85,706	3,001,524	42,821,252
2003	1,343,439	62,614	370,620	3,563,565	33,297,676	86,831	83,175	2,925,985	41,733,905
2004	1,314,475	61,062	363,679	3,440,535	32,811,280	84,966	81,410	2,864,261	41,021,668
2005	1,316,236	61,162	363,690	3,440,456	32,874,916	85,112	81,566	2,868,203	41,091,341
2006	1,278,292	59,033	363,523	3,338,531	32,062,625	82,279	78,870	2,784,051	40,047,204
2007	1,280,052	59,130	363,559	3,345,045	32,092,117	82,407	78,982	2,787,936	40,089,228
2008	1,325,202	61,669	363,583	3,455,478	33,111,304	85,790	82,260	2,888,171	41,373,457
2009	1,327,385	61,791	363,607	3,462,296	33,153,479	85,953	82,410	2,893,006	41,429,927
2010	1,309,986	60,814	363,543	3,416,320	32,777,624	84,653	81,168	2,854,410	40,948,518
2011	1,329,051	61,873	364,625	3,468,715	33,184,568	86,034	82,471	2,896,327	41,473,664
2012	1,329,687	61,907	364,644	3,471,468	33,193,011	86,081	82,511	2,897,729	41,487,038
2013	1,213,726	55,388	364,778	3,199,771	30,516,871	77,383	74,009	2,640,192	38,142,118
2014	1,177,583	53,353	362,257	3,125,263	29,632,700	74,663	71,296	2,559,834	37,056,949
2015	1,152,618	51,950	358,945	2,991,100	29,066,923	72,792	69,482	2,504,406	36,268,216
2016	1,135,352	50,980	352,882	2,882,633	28,690,033	71,500	68,242	2,466,094	35,717,716
2017	1,137,884	51,122	338,686	2,760,575	28,737,678	71,690	68,413	2,471,699	35,637,747
2018	1,169,157	52,878	316,134	2,728,736	29,401,398	65,512	70,630	2,541,053	36,345,498
2019	1,150,209	51,814	307,564	2,617,774	28,999,322	63,592	69,286	2,499,035	35,758,596
2020	1,142,681	51,390	305,717	2,564,816	28,839,348	62,780	68,754	2,482,337	35,517,823
2021	1,126,002	50,454	304,544	2,498,693	28,481,080	61,391	67,564	2,445,341	35,035,069
2022	1,162,905	52,527	304,112	2,589,148	29,264,431	64,079	70,179	2,527,184	36,034,565
2023	1,128,446	50,592	303,500	2,490,219	28,537,115	61,477	67,743	2,450,769	35,089,861
2024	1,147,006	51,635	303,073	2,538,593	28,931,036	62,845	69,058	2,491,926	35,595,172
2025	1,134,824	50,949	302,487	2,505,245	28,661,532	61,911	68,180	2,464,891	35,250,019
2026	1,142,398	51,375	302,256	2,523,834	28,822,398	62,439	68,717	2,481,686	35,455,103
2027	1,131,296	50,751	301,557	2,490,605	28,586,364	61,570	67,932	2,457,069	35,147,144
2028	1,149,984	51,801	299,215	2,539,472	28,983,491	62,939	69,255	2,498,514	35,654,671
2029	1,128,929	50,619	298,796	2,479,080	28,536,465	61,306	67,762	2,451,822	35,074,779
2030	1,119,079	50,065	298,457	2,449,229	28,327,402	60,502	67,065	2,429,977	34,801,776
2031	1,155,637	52,118	297,051	2,530,381	29,103,168	62,841	69,657	2,511,056	35,781,909
2032	1,152,125	51,920	297,023	2,523,195	29,028,959	62,594	69,408	2,503,265	35,688,489
2033	1,114,871	49,829	296,502	2,416,913	28,238,049	59,679	66,765	2,420,643	34,663,251
2034	1,138,286	51,144	296,002	2,474,296	28,734,996	61,285	68,426	2,472,569	35,297,004
2035	1,150,652	51,838	295,333	2,498,934	28,997,697	61,977	69,301	2,499,997	35,625,729
Total	67,647,678	2,934,555	17,815,387	162,982,882	1,689,447,131	3,911,535	3,985,251	142,620,976	2,091,345,395

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,350	0	0	0	0	0	0	0	51,775	0
1964	62,920	27,471	14,440	4,374	37,191	1,144	28,462	8,212	82,882	35,018
1965	118,700	53,051	25,116	7,200	40,804	2,084	50,360	15,235	135,181	35,373
1966	215,956	101,346	44,767	12,489	73,212	3,757	90,473	27,701	232,692	61,514
1967	417,814	210,983	86,188	23,491	141,524	7,291	175,317	54,067	433,698	115,666
1968	736,544	478,485	152,802	41,540	251,383	12,879	310,927	95,534	782,746	209,081
1969	1,059,784	724,811	225,475	61,271	371,233	18,707	458,451	138,164	1,206,739	321,996
1970	1,378,037	904,814	315,497	89,765	519,703	25,248	632,482	184,974	1,779,532	467,926
1971	1,705,581	1,088,727	432,865	128,457	713,269	31,859	856,464	231,446	2,540,123	659,906
1972	2,022,473	1,307,514	561,994	181,316	926,232	42,432	1,110,400	274,779	3,390,971	865,670
1973	2,112,694	1,323,478	696,337	183,824	1,137,766	43,510	1,173,248	287,499	3,974,004	947,284
1974	2,176,244	1,382,860	711,850	193,401	1,164,624	45,241	1,205,021	292,257	4,000,980	991,249
1975	2,352,838	1,450,741	752,769	206,163	1,232,438	48,519	1,271,597	304,471	4,161,622	1,091,759
1976	2,705,970	1,446,005	799,321	215,209	1,308,125	51,492	1,313,988	313,876	4,302,178	1,145,730
1977	2,648,580	1,514,973	695,107	226,163	1,145,762	47,374	1,385,497	329,559	4,556,513	1,209,899
1978	2,969,237	1,600,086	877,104	231,308	1,422,806	47,159	1,385,254	321,879	4,463,646	1,213,759
1979	3,525,537	1,634,473	945,029	238,242	1,521,496	48,440	1,512,978	332,685	4,424,998	1,153,249
1980	4,073,722	1,731,833	1,034,575	259,716	1,683,074	53,398	1,631,988	360,678	4,838,509	1,266,907
1981	4,403,981	1,970,338	1,105,731	271,519	1,800,997	77,987	1,752,062	392,122	5,229,065	1,358,923
1982	3,962,919	2,062,244	1,157,863	280,649	1,887,346	55,995	1,948,807	407,130	5,415,475	1,567,902
1983	5,151,290	2,324,040	1,748,104	333,381	2,831,934	69,431	2,021,112	495,006	6,025,086	1,557,705
1984	7,183,746	3,401,310	2,831,082	446,133	4,559,845	75,781	2,252,195	553,355	7,061,186	2,335,831
1985	8,950,811	3,736,622	3,631,348	542,084	5,841,417	79,671	2,371,256	736,153	7,767,533	2,386,362
1986	8,799,777	4,318,555	4,053,158	578,240	6,523,517	102,494	2,463,507	1,001,007	7,868,074	3,052,016
1987	8,819,443	4,160,158	3,909,466	606,116	6,373,488	211,977	2,506,470	1,028,243	9,243,526	3,040,348
1988	8,292,278	4,220,415	3,908,289	617,463	6,437,385	124,885	2,564,116	781,197	9,533,051	2,836,914
1989	8,674,883	4,103,664	3,556,011	588,691	5,913,419	170,954	2,514,353	1,445,499	8,985,431	2,943,024
1990	9,948,903	4,538,036	4,227,710	622,070	6,972,170	289,671	2,706,065	1,641,056	9,848,196	3,694,954
1991	6,464,871	3,261,956	2,737,283	570,643	4,513,920	175,421	3,479,218	1,298,373	9,015,284	3,062,423
1992	8,560,828	4,469,789	2,809,081	473,422	4,632,239	121,676	4,283,284	1,132,020	8,684,398	3,011,887
1993	8,953,339	4,106,181	3,011,530	477,054	4,966,177	158,289	4,167,105	1,351,446	9,646,408	3,361,177
1994	11,124,475	4,707,924	3,079,942	566,717	5,078,832	226,144	5,215,326	1,701,004	10,751,027	4,225,637
1995	10,754,756	4,979,558	3,847,532	519,419	6,345,076	156,282	4,286,413	1,532,751	9,931,878	3,850,477
1996	10,821,452	5,023,676	6,520,107	518,851	10,753,165	147,599	4,094,515	1,819,970	10,252,737	3,847,518
1997	11,340,974	5,012,322	6,328,845	597,934	7,466,065	144,975	4,820,615	1,871,200	11,896,638	4,217,610
1998	10,051,464	4,606,178	6,005,206	572,132	6,245,480	148,220	5,661,099	1,511,096	11,906,094	3,588,605
1999	17,229,563	6,477,903	4,372,259	877,683	7,210,473	416,116	6,489,221	2,598,868	14,399,506	5,160,411
2000	18,403,492	10,546,699	3,952,539	1,030,424	6,518,236	361,009	7,855,630	2,701,259	19,595,804	5,030,340
2001	18,990,260	10,977,703	4,008,648	1,039,473	6,610,796	368,123	7,755,637	2,755,699	20,791,808	5,055,256
2002	18,283,833	10,356,989	3,890,705	989,720	6,416,275	357,690	7,547,587	2,677,184	20,178,620	4,830,956
2003	18,156,258	10,450,597	3,727,607	987,252	6,147,261	345,204	7,971,188	2,571,999	19,809,982	4,818,813
2004	17,815,081	10,466,357	3,625,765	992,180	5,979,291	336,919	7,819,796	2,510,035	21,331,362	4,658,224
2005	17,881,087	10,616,524	3,660,302	1,022,211	6,036,276	337,699	8,408,842	2,515,918	21,904,046	4,730,510
2006	17,204,581	10,201,988	3,461,646	957,021	5,708,599	323,102	8,724,767	2,406,191	20,548,981	4,411,879
2007	17,459,680	10,506,247	3,481,165	985,684	5,740,806	323,870	9,284,411	2,411,942	20,859,239	4,488,677
2008	18,452,132	10,983,098	3,683,790	1,018,174	6,075,000	341,095	10,226,923	2,541,533	21,656,314	5,319,181
2009	18,736,871	11,046,975	3,696,637	1,039,128	6,096,187	341,998	10,839,818	2,548,287	21,811,983	4,662,113
2010	18,585,578	10,784,962	3,617,644	1,019,724	5,965,898	335,422	11,244,626	2,498,847	21,390,644	4,562,422
2011	19,243,065	11,128,228	3,705,481	1,058,272	6,110,780	342,317	12,036,795	2,550,619	21,866,233	4,697,375
2012	19,509,032	11,155,750	3,705,299	1,066,485	6,110,475	342,656	12,640,032	2,553,159	21,807,547	4,695,505
2013	17,233,723	10,244,266	3,173,683	986,298	5,220,356	298,486	11,650,671	2,220,894	19,235,098	4,397,752
2014	16,502,604	10,139,119	3,008,519	989,578	4,961,862	283,492	11,632,710	2,108,400	18,823,891	4,399,777
2015	15,888,343	9,838,397	2,873,535	947,980	4,739,223	273,117	11,231,229	2,030,417	17,929,601	4,240,194
2016	15,405,002	9,529,894	2,791,629	947,925	4,604,135	265,017	10,916,854	1,969,653	17,887,469	4,211,698
2017	15,266,250	9,407,970	2,754,179	927,831	4,542,365	262,541	10,823,329	1,951,205	17,492,160	4,136,037
2018	15,731,110	9,601,244	2,850,496	954,501	4,701,242	270,004	11,104,787	2,007,854	17,920,820	4,273,705
2019	15,010,043	8,963,630	2,702,533	924,556	4,457,212	257,554	10,635,031	1,915,438	17,318,708	4,075,224
2020	14,539,290	8,564,364	2,575,914	874,934	4,248,372	248,476	10,310,226	1,849,547	16,386,135	3,849,453
2021	13,904,177	8,017,143	2,389,267	809,887	3,940,536	236,750	9,828,281	1,764,616	15,145,750	3,548,304
2022	14,635,742	8,480,617	2,514,651	848,098	4,147,347	248,661	10,262,316	1,854,954	15,717,598	3,705,566
2023	13,788,507	7,877,972	2,347,919	815,025	3,872,351	234,397	9,700,457	1,748,248	15,090,820	3,504,879
2024	14,200,017	8,157,193	2,413,754	818,460	3,980,936	241,233	9,964,170	1,799,673	15,125,751	3,541,226
2025	13,889,269	7,919,461	2,342,287	801,897	3,863,057	236,031	9,747,557	1,760,670	14,817,367	3,470,853
2026	14,066,022	8,094,611	2,379,093	821,617	3,923,780	238,935	9,847,237	1,782,680	15,136,513	3,541,142
2027	13,781,244	7,768,263	2,312,822	791,434	3,814,471	234,177	9,654,306	1,746,967	14,571,119	3,410,380
2028	14,210,973	8,287,764	2,383,972	801,912	3,931,812	241,311	9,925,077	1,800,669	14,755,224	3,475,781
2029	13,711,891	7,698,942	2,301,920	800,546	3,796,494	232,992	9,599,600	1,738,149	14,732,072	3,432,545
2030	13,468,580	7,510,046	2,257,887	790,979	3,723,875	228,937	9,441,982	1,707,707	14,554,335	3,380,759
2031	14,209,067	7,889,978	2,376,098	793,986	3,918,837	241,204	9,927,628	1,800,040	14,602,411	3,445,979
2032	14,139,567	8,009,264	2,384,296	820,162	3,932,368	240,041	9,885,805	1,791,325	15,081,487	3,532,603
2033	13,206,144	7,125,776	2,189,387	758,643	3,610,887	224,482	9,292,976	1,674,398	13,978,811	3,248,546
2034	13,634,216	7,517,109	2,274,137	776,889	3,750,674	231,596	9,594,069	1,727,892	14,299,493	3,343,213
2035	13,860,064	7,730,110	2,346,067	824,039	3,869,332	235,253	9,755,037	1,756,243	15,138,958	3,522,152
Total	772,808,529	428,057,770	183,373,056	45,197,055	295,110,991	13,645,893	437,277,033	102,620,823	858,113,546	218,540,729

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
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	691,434	0	776,559	0	0	0	0	55,786	1,622,881
1964	21,755	1,261,586	9,385	1,594,840	0	0	0	0	84,035	2,779,303
1965	21,884	2,182,391	17,781	2,705,160	0	0	405	405	129,109	4,767,500
1966	37,995	3,903,336	33,453	4,838,691	0	0	565	565	148,449	7,333,636
1967	71,340	7,699,872	68,210	9,505,461	0	0	563	563	204,794	12,702,978
1968	129,009	15,329,328	142,909	18,673,167	0	0	565	565	279,427	24,736,969
1969	198,915	23,170,465	215,370	28,171,381	0	0	3,194	3,194	349,372	35,783,273
1970	289,850	30,640,209	273,809	37,501,846	0	0	15,133	15,133	386,449	45,896,753
1971	409,633	39,988,560	342,677	49,129,567	0	0	16,014	16,014	376,010	58,518,195
1972	537,544	52,983,818	422,584	64,627,727	0	0	17,386	17,386	401,525	76,289,430
1973	588,339	57,310,608	435,937	70,214,528	0	0	17,348	17,348	376,003	80,957,493
1974	611,808	61,815,936	455,859	75,047,330	0	0	17,491	17,491	398,980	86,680,786
1975	645,018	66,798,207	478,703	80,794,845	0	0	18,419	18,419	408,199	93,832,277
1976	668,719	68,527,096	475,883	83,273,592	0	0	17,490	17,490	430,790	97,199,504
1977	696,926	66,275,106	507,365	81,238,824	0	0	18,246	18,246	423,530	95,242,304
1978	709,525	73,035,881	523,605	88,801,249	0	0	17,394	17,394	426,776	104,799,905
1979	713,299	72,766,720	526,752	89,343,898	0	0	20,592	20,592	446,818	107,149,711
1980	778,443	80,877,938	571,518	99,162,299	0	0	17,774	17,774	507,637	117,957,573
1981	806,461	91,421,975	636,840	111,228,001	0	0	21,207	21,207	517,203	131,939,287
1982	853,943	93,307,001	670,831	113,578,105	0	0	28,318	28,318	505,367	135,318,926
1983	952,705	101,886,147	803,953	126,199,894	0	0	16,940	16,940	553,237	151,733,999
1984	1,074,214	138,957,414	880,615	171,612,707	0	0	18,006	18,006	564,376	209,691,643
1985	1,125,187	173,117,990	904,901	211,191,335	0	0	19,963	19,963	681,487	258,486,632
1986	1,151,274	193,450,168	937,770	234,299,557	0	0	19,961	19,961	620,303	284,519,172
1987	1,174,581	178,999,977	908,449	220,982,242	0	0	19,962	19,962	687,024	272,821,822
1988	1,212,454	190,499,990	905,329	231,933,766	0	0	19,969	19,969	708,693	284,844,947
1989	1,201,111	193,685,163	933,161	234,715,364	0	0	20,044	20,044	768,602	288,259,531
1990	1,305,849	239,906,304	1,485,341	287,186,325	0	0	20,061	20,061	821,772	340,415,352
1991	1,370,435	180,721,948	1,143,933	217,815,708	0	0	20,108	20,108	567,763	256,294,330
1992	1,367,809	196,919,853	1,025,540	237,491,826	0	0	20,154	20,154	804,830	287,220,276
1993	1,531,139	170,484,904	1,069,883	213,284,632	0	0	19,912	19,912	965,343	272,364,723
1994	1,588,647	212,188,104	1,007,678	261,461,457	0	0	20,442	20,442	977,973	320,360,969
1995	1,603,032	176,365,099	1,064,667	225,236,940	0	0	20,595	20,595	904,950	294,203,682
1996	1,596,789	180,065,251	1,088,185	236,549,815	0	0	20,755	20,755	941,157	316,737,471
1997	1,813,366	191,364,827	1,224,787	248,100,158	0	0	20,822	20,822	805,926	332,479,677
1998	1,936,428	174,270,853	1,248,332	227,751,187	0	0	21,003	21,003	839,460	311,913,749
1999	2,035,285	258,418,501	1,453,044	327,138,833	0	0	21,866	21,866	1,020,127	438,740,645
2000	3,392,597	288,854,335	2,128,457	370,370,821	0	0	21,723	21,723	1,086,565	475,527,859
2001	4,654,683	292,113,676	2,161,304	377,283,067	0	0	21,489	21,489	1,126,147	482,951,166
2002	4,600,205	265,132,923	2,080,079	347,342,767	0	0	21,294	21,294	1,135,372	451,305,616
2003	4,634,767	268,589,141	2,013,177	350,223,247	0	0	21,294	21,294	1,135,982	452,412,777
2004	4,616,454	268,862,378	2,742,397	351,756,240	0	0	21,294	21,294	1,111,254	453,283,241
2005	4,865,257	274,240,690	2,763,009	358,982,372	0	0	21,294	21,294	1,111,147	460,642,513
2006	4,773,691	260,464,465	2,613,504	341,800,416	0	0	21,294	21,294	1,110,609	441,686,219
2007	5,542,987	264,719,762	2,624,193	348,428,664	0	0	21,294	21,294	1,110,725	448,392,152
2008	5,682,664	278,937,902	2,786,683	367,704,490	0	0	21,294	21,294	1,110,800	469,875,443
2009	5,703,865	282,118,088	2,796,002	371,437,953	0	0	21,294	21,294	1,110,882	473,712,162
2010	5,636,421	278,673,010	2,734,095	367,049,294	0	0	21,294	21,294	1,110,673	468,508,297
2011	5,712,400	286,834,573	2,799,864	378,086,003	0	0	21,294	21,294	1,114,532	480,457,646
2012	5,705,477	288,906,439	2,800,237	380,998,094	0	0	21,294	21,294	1,114,598	483,399,287
2013	5,280,498	256,342,642	2,390,707	338,675,075	0	0	21,294	21,294	1,071,862	434,710,082
2014	5,196,548	247,973,390	2,250,111	328,270,002	0	0	21,294	21,294	1,045,584	422,123,061
2015	5,060,763	239,707,295	2,151,534	316,911,629	0	0	20,889	20,889	1,015,490	408,934,064
2016	5,036,965	234,583,579	2,079,395	310,229,216	0	0	20,729	20,729	998,373	401,083,503
2017	4,981,728	232,748,775	2,052,455	307,346,826	0	0	20,731	20,731	958,531	397,885,395
2018	5,052,468	238,505,299	2,098,634	315,072,165	0	0	20,729	20,729	883,623	406,538,652
2019	4,944,513	226,754,960	1,967,426	299,926,829	0	0	18,100	18,100	819,395	390,151,937
2020	4,803,026	216,411,498	1,883,107	286,544,343	0	0	6,161	6,161	798,979	376,282,874
2021	4,611,168	201,722,231	1,760,157	267,678,268	0	0	5,334	5,334	794,989	356,583,532
2022	4,704,893	210,484,025	1,855,234	279,459,703	0	0	3,948	3,948	794,940	370,074,103
2023	4,591,137	195,122,517	1,732,322	260,426,552	0	0	3,947	3,947	793,675	349,385,463
2024	4,609,530	200,456,437	1,790,373	267,098,754	0	0	3,946	3,946	793,556	356,916,788
2025	4,556,273	192,673,219	1,725,822	257,803,764	0	0	3,944	3,944	792,024	347,010,693
2026	4,600,593	198,389,856	1,765,612	264,587,692	0	0	3,943	3,943	791,726	353,828,866
2027	4,518,391	187,774,109	1,689,695	252,067,379	0	0	3,940	3,940	790,707	340,757,552
2028	4,555,890	201,320,884	1,812,279	267,503,549	0	0	3,939	3,939	789,926	357,028,140
2029	4,534,426	188,342,810	1,678,750	252,601,138	0	0	3,937	3,937	788,121	341,102,841
2030	4,503,488	184,976,777	1,640,508	248,185,861	0	0	3,936	3,936	786,603	336,178,304
2031	4,535,985	191,955,821	1,713,995	257,411,030	0	0	3,934	3,934	784,169	347,004,790
2032	4,593,997	196,739,944	1,750,980	262,901,840	0	0	3,932	3,932	784,458	352,316,638
2033	4,419,951	176,192,454	1,555,854	237,478,310	0	0	3,932	3,932	783,044	325,066,516
2034	4,475,922	184,413,370	1,639,711	247,678,292	0	0	3,931	3,931	779,735	336,178,872
2035	4,590,234	191,852,399	1,686,297	257,166,186	0	0	3,930	3,930	775,688	345,922,775
Total	207,110,577	12,455,181,633	100,608,998	16,117,646,633	0	0	1,076,513	1,076,513	53,993,766	20,737,872,660

Table B-20A

Calculation of Delta Water Rates

Calculation in accordance with Article 53(i) of the Monterey Amendment

(Values in millions of dollars [$] or millions of acre-feet [AF] discounted to 1999 at 4.615 percent per annum)

Procedure	*Capital Cost Component (1)*		*Minimum Operation Maintenance, Power and Replacement Component (a (2)*		*Total Delta Water Rate (3)*	
Commencing in 2000						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Project Water Entitlements during the Project Repayment Period.	$3,466.06 b)	216.85 AF	$2,161.58 c)	218.85 AF	$5,627.64	216.85 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period.	(1,264.18)		(395.65)		(1,659.83)	
Less, Delta Water Charges Paid and Project Water Entitlements, Prior to 2000	(1,349.17) d)	(144.44) AF	(884.72)	(144.44) AF	(2,233.89)	(144.44) AF
Total	$852.71	72.41 AF	$881.21	72.41 AF	$1,733.92	72.41 AF
Rate Applicable in 2000	$11.78	per acre-foot	$12.17	per acre-foot	$23.95	per acre-foot

Calculation under original provisions, without the Monterey Amendment

(for Plumas County and Empire)

Procedure	*Capital Cost Component (1)*		*Minimum Operation Maintenance, Power and Replacement Component (a (2)*		*Total Delta Water Rate (3)*	
Commencing in 2000						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Project Water Entitlements during the Project Repayment Period.	$3,457.86 b)	216.85	$2,148.11 c)	216.85	$5,605.97	216.85
Less, Project Power Revenues to be Realized During the Project Repayment Period.	(1,264.18)		(395.65)		(1,659.83)	
Less, Delta Water Charges Paid and Project Water Entitlements, Prior to 2000	(1,349.17) d)	(144.44) AF	(884.72)	(144.44) AF	(2,233.89)	(144.44) AF
Total	$844.51	72.41 AF	$867.74	72.41 AF	$1,712.25	72.41 AF
Rate Applicable in 2000	$11.66	per acre-foot	$11.72	per acre-foot	$23.64	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).

Table B-20B

Delta Water Rates by Facility

(Dollars per Acre-Foot)

Item	*Capital Cost Component (1)*	*Minimum Operation, Maintenance, Power and Replacement Component (2)*	*Total Delta Water Rate (3)*
Initial Conservation Facilities			
Oroville Division			
Water Supply and Power Costs (a	29.05	15.17	44.22
Less, Oroville Power Revenues	-17.46	-5.46	-22.92
Subtotal	11.59	9.71	21.30
Delta Facilities (b	8.27	7.41	15.68
California Aqueduct, portion			
Reach 1	1.87	2.81	4.68
Reach 2A	1.11	0.52	1.63
Reach 2B	0.56	0.26	0.82
Reach 3	0.40	0.16	0.56
Subtotal	3.94	3.75	7.69
San Luis Facilities	5.61	3.38	8.99
Planning and preoperating costs through 1998	1.68	0.00	1.68
45,000 AF relinquished costs	0.11	0.14	0.25
Less, Capital Cost Credits	-0.79	0.00	-0.79
Less, Delta Water Charges paid prior to 2000	-18.63	-12.22	-30.85
Rate applicable in 2000	11.78	12.17	23.95

a) Includes revenue received from non-contractors.
b) Includes (1) Delta Facility planning costs, (2) Delta Studies costs, and (3) Suisun Marsh Facilities Costs.

Table B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County (8)	Santa Barbara County (9)	Total (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	172,457	530,778	703,235	771,894	840,958	1,990,673	3,603,525	507,825	923,957	1,431,782
1994	177,824	546,610	724,434	778,647	817,579	1,946,615	3,542,841	486,654	885,437	1,372,091
1995	203,738	713,497	917,235	874,946	874,946	2,083,205	3,833,097	520,801	947,567	1,468,368
1996	213,506	774,152	987,658	901,129	860,168	2,048,020	3,809,317	512,005	931,562	1,443,567
1997	250,558	866,141	1,116,699	1,041,633	951,056	2,264,420	4,257,109	566,105	1,029,994	1,596,099
1998	266,952	882,469	1,149,421	1,048,658	957,470	2,279,691	4,285,819	141,683	888,760	1,030,443
1999	290,688	923,459	1,214,147	1,084,480	990,178	2,357,566	4,432,224	589,391	1,072,362	1,661,753
2000	390,936	948,784	1,339,720	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2001	399,916	959,799	1,359,715	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2002	408,897	970,815	1,379,712	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2003	417,877	981,831	1,399,708	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2004	426,857	992,607	1,419,464	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2005	435,837	993,804	1,429,641	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2006	443,620	995,002	1,438,622	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2007	451,403	996,199	1,447,602	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2008	459,185	997,396	1,456,581	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2009	466,968	998,594	1,465,562	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2010	474,751	999,791	1,474,542	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2011	482,534	1,000,988	1,483,522	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2012	490,317	1,002,186	1,492,503	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2013	496,902	1,003,383	1,500,285	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2014	505,882	1,004,581	1,510,463	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2015	522,047	1,005,778	1,527,825	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2016	537,014	1,005,778	1,542,792	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2017	551,980	1,005,778	1,557,758	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2018	566,947	1,005,778	1,572,725	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2019	581,914	1,005,778	1,587,692	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2020	596,283	1,005,778	1,602,061	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2021	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2022	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2023	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2024	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2025	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2026	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2027	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2028	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2029	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2030	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2031	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2032	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2033	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2034	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
2035	598,677	1,005,778	1,604,455	1,101,566	1,005,778	2,394,709	4,502,053	598,677	1,089,257	1,687,934
Total	21,291,767	43,080,375	64,372,142	53,527,734	51,153,030	128,213,020	232,893,784	27,423,186	50,513,620	77,936,806

Table B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipl and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (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	1,714,679	12,925,113	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	2,727,688	20,646,125	81,061	115,511	2,401,419	27,201,898
1993	1,172,060	60,939	0	2,734,129	20,694,874	81,252	115,784	2,407,089	27,266,127
1994	1,123,198	58,398	0	2,156,809	20,295,455	77,865	110,957	2,306,739	26,129,421
1995	1,202,009	62,497	0	2,803,995	21,223,694	83,328	118,743	2,468,598	27,962,864
1996	534,818	69,191	0	2,756,635	19,492,814	81,921	102,219	2,426,904	25,464,502
1997	1,208,521	67,162	0	3,047,908	22,148,973	90,576	129,072	2,683,338	29,375,550
1998	1,216,671	77,807	0	2,726,511	22,070,376	91,188	129,942	2,820,148	29,132,643
1999	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2000	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2001	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2002	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2003	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2004	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2005	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2006	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2007	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2008	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2009	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2010	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2011	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2012	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2013	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2014	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2015	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2016	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2017	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2018	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2019	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2020	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2021	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2022	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2023	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2024	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2025	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2026	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2027	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2028	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2029	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2030	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2031	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2032	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2033	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2034	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
2035	1,278,056	70,944	0	2,864,072	22,202,068	95,788	136,498	2,837,730	29,485,156
Total	66,720,169	3,898,209	0	148,087,471	1,154,828,199	4,904,212	7,172,707	144,479,178	1,530,090,145

Table B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Municipal Water District (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	2,811,318	1,100,964	469,230	117,815	773,925	46,720	1,031,900	351,415	2,084,113	585,014
1994	2,694,116	1,055,065	449,668	112,905	741,661	44,772	988,880	336,766	1,997,227	560,625
1995	2,883,156	1,129,097	481,220	120,826	793,702	47,914	1,058,269	360,394	2,137,369	599,963
1996	2,834,460	1,110,027	473,093	118,785	780,296	47,104	1,040,394	354,307	2,101,269	589,830
1997	3,133,957	1,227,316	523,081	131,336	862,744	52,082	1,150,325	391,745	2,323,295	652,153
1998	3,155,093	1,235,593	526,609	132,222	868,562	52,433	1,728,006	394,387	2,338,963	656,551
1999	3,262,870	1,277,800	544,598	136,739	898,233	54,224	1,787,034	407,859	2,418,863	678,979
2000	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2001	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2002	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2003	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2004	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2005	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2006	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2007	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2008	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2009	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2010	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2011	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2012	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2013	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2014	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2015	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2016	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2017	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2018	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2019	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2020	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2021	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2022	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2023	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2024	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2025	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2026	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2027	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2028	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2029	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2030	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2031	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2032	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2033	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2034	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
2035	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	414,285	2,456,972	689,676
Total	160,733,568	100,889,360	27,709,587	6,951,376	45,532,413	2,753,964	83,655,214	21,048,778	125,385,882	35,001,873

Table B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
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	351,415	40,859,579	406,260	50,989,668	195,005	24,376	23,563	242,944	0	84,237,281
1994	336,766	39,156,173	389,323	48,863,947	186,875	23,360	23,360	233,595	0	80,866,329
1995	360,394	41,903,674	416,641	52,292,619	199,987	24,999	26,040	251,026	0	86,725,209
1996	0	41,195,923	409,604	51,055,092	196,610	24,576	26,624	247,810	0	83,007,946
1997	0	45,548,810	447,746	56,444,590	214,918	27,173	30,223	272,314	0	93,062,361
1998	0	45,855,992	450,529	57,394,940	107,459	27,356	31,537	166,352	0	93,159,618
1999	47,152	47,422,430	466,491	59,403,272	226,327	28,291	33,820	288,438	0	96,994,387
2000	71,841	48,169,576	478,942	61,350,056	229,892	69,207	35,708	334,807	0	98,699,726
2001	95,788	48,169,576	478,942	61,374,003	229,892	658,545	37,127	925,564	0	99,334,425
2002	95,788	48,169,576	478,942	61,374,003	229,892	658,545	38,546	926,983	0	99,355,841
2003	119,735	48,169,576	478,942	61,397,950	229,892	658,545	39,965	928,402	0	99,401,203
2004	143,683	48,169,576	478,942	61,421,898	229,892	658,545	41,384	929,821	0	99,446,326
2005	155,656	48,169,576	478,942	61,433,871	229,892	658,545	42,803	931,240	0	99,469,895
2006	167,630	48,169,576	478,942	61,445,845	229,892	658,545	44,458	932,895	0	99,492,505
2007	179,603	48,169,576	478,942	61,457,818	229,892	658,545	46,113	934,550	0	99,515,113
2008	414,285	48,169,576	478,942	61,692,500	229,892	658,545	47,769	936,206	0	99,760,430
2009	414,285	48,169,576	478,942	61,692,500	229,892	658,545	49,424	937,861	0	99,771,066
2010	414,285	48,169,576	478,942	61,692,500	229,892	658,545	51,079	939,516	0	99,781,701
2011	414,285	48,169,576	478,942	61,692,500	229,892	658,545	52,971	941,408	0	99,792,573
2012	414,285	48,169,576	478,942	61,692,500	229,892	658,545	54,863	943,300	0	99,803,446
2013	414,285	48,169,576	478,942	61,692,500	229,892	658,545	56,991	945,428	0	99,813,356
2014	414,285	48,169,576	478,942	61,692,500	229,892	658,545	59,120	947,557	0	99,825,663
2015	414,285	48,169,576	478,942	61,692,500	229,892	658,545	61,485	949,922	0	99,845,390
2016	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,862,721
2017	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,877,687
2018	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,892,654
2019	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,907,621
2020	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,921,990
2021	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2022	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2023	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2024	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2025	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2026	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2027	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2028	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2029	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2030	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2031	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2032	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2033	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2034	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
2035	414,285	48,169,576	478,942	61,692,500	229,892	658,545	63,849	952,286	0	99,924,384
Total	16,399,978	2,421,751,058	22,364,031	3,070,177,082	10,252,981	23,637,257	2,471,038	36,361,276	0	5,011,831,235

Table B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County (8)	Santa Barbara County (9)	Total (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	29,131	40,505	69,636	25,436	30,176	100,035	155,647	13,126	24,392	37,518
1989	48,804	69,621	118,425	43,343	51,681	170,303	265,327	26,828	49,634	76,462
1990	41,166	60,482	101,648	38,407	51,185	149,440	239,032	27,956	51,795	79,751
1991	63,389	92,401	155,790	62,470	81,991	235,712	380,173	44,887	83,709	128,596
1992	84,320	126,227	210,547	89,247	115,208	325,629	530,084	61,137	113,925	175,062
1993	90,152	137,473	227,625	98,432	125,174	347,457	571,063	67,725	126,662	194,387
1994	91,785	141,222	233,007	102,021	126,216	352,415	580,652	81,420	159,156	240,576
1995	108,311	181,787	290,098	126,000	149,378	416,955	692,333	131,674	270,727	402,401
1996	132,304	232,343	364,647	158,514	180,787	505,043	844,344	242,654	534,448	777,102
1997	252,468	442,322	694,790	318,973	348,586	972,451	1,640,010	264,118	1,576,807	1,840,925
1998	307,685	536,925	844,610	387,638	423,396	1,181,056	1,992,090	327,283	1,932,091	2,259,374
1999	317,047	549,671	866,718	394,465	430,875	1,201,834	2,027,174	328,041	1,952,782	2,280,823
2000	391,377	597,828	989,205	427,787	467,339	1,303,756	2,198,882	358,219	2,237,677	2,595,896
2001	388,681	593,710	982,391	424,840	464,120	1,294,776	2,183,736	355,751	2,222,263	2,578,014
2002	384,858	587,871	972,729	420,662	459,555	1,282,042	2,162,259	352,252	2,200,407	2,552,659
2003	382,460	584,208	966,668	418,041	456,692	1,274,054	2,148,787	350,058	2,186,697	2,536,755
2004	387,268	591,551	978,819	423,296	462,433	1,290,069	2,175,798	354,458	2,214,184	2,568,642
2005	385,222	588,426	973,648	421,059	459,989	1,283,253	2,164,301	352,585	2,202,487	2,555,072
2006	378,844	578,683	957,527	414,088	452,373	1,262,006	2,128,467	346,747	2,166,019	2,512,766
2007	377,474	576,592	954,066	412,591	450,738	1,257,445	2,120,774	345,494	2,158,191	2,503,685
2008	382,688	584,555	967,243	418,289	456,963	1,274,811	2,150,063	350,266	2,187,997	2,538,263
2009	383,475	585,758	969,233	419,150	457,904	1,277,434	2,154,488	350,987	2,192,500	2,543,487
2010	384,110	586,728	970,838	419,844	458,662	1,279,549	2,158,055	351,568	2,196,129	2,547,697
2011	384,932	587,983	972,915	420,742	459,643	1,282,286	2,162,671	352,320	2,200,828	2,553,148
2012	385,645	589,073	974,718	421,522	460,495	1,284,663	2,166,680	352,973	2,204,907	2,557,880
2013	383,346	585,561	968,907	419,009	457,750	1,277,005	2,153,764	350,869	2,191,762	2,542,631
2014	398,489	608,692	1,007,181	435,561	475,832	1,327,449	2,238,842	364,728	2,278,341	2,643,069
2015	389,489	594,944	984,433	425,723	465,085	1,297,468	2,188,276	356,491	2,226,884	2,583,375
2016	388,263	593,071	981,334	424,383	463,620	1,293,382	2,181,385	355,368	2,219,872	2,575,240
2017	386,674	590,644	977,318	422,646	461,723	1,288,089	2,172,458	353,914	2,210,787	2,564,701
2018	387,155	591,379	978,534	423,172	462,298	1,289,693	2,175,163	354,355	2,213,539	2,567,894
2019	388,837	593,948	982,785	425,011	464,306	1,295,296	2,184,613	355,894	2,223,157	2,579,051
2020	389,816	595,444	985,260	426,081	465,475	1,298,557	2,190,113	356,790	2,228,754	2,585,544
2021	448,374	684,891	1,133,265	490,086	535,399	1,493,625	2,519,110	410,387	2,563,555	2,973,942
2022	336,173	513,505	849,678	367,448	401,421	1,119,862	1,888,731	307,692	1,922,054	2,229,746
2023	432,470	660,598	1,093,068	472,703	516,408	1,440,647	2,429,758	395,831	2,472,626	2,868,457
2024	376,504	575,109	951,613	411,530	449,579	1,254,210	2,115,319	344,606	2,152,640	2,497,246
2025	214,241	327,253	541,494	234,172	255,823	713,682	1,203,677	196,090	1,224,914	1,421,004
2026	77,991	119,131	197,122	85,246	93,128	259,803	438,177	71,383	445,909	517,292
2027	43,237	66,044	109,281	47,259	51,629	144,031	242,919	39,574	247,205	286,779
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	11,604,655	17,944,159	29,548,814	12,816,887	14,101,035	39,397,273	66,315,195	10,804,499	64,268,413	75,072,912

Table B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (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	33,986	1,657	0	67,288	726,501	2,228	2,851	66,748	901,259
1989	59,273	2,785	0	116,689	1,251,452	3,733	4,927	116,736	1,555,595
1990	53,349	2,419	0	287,811	947,351	3,248	4,367	109,118	1,407,663
1991	82,252	3,731	0	359,380	1,564,983	5,035	6,771	168,217	2,190,369
1992	112,566	5,127	0	452,691	2,153,423	6,927	9,285	230,217	2,970,236
1993	119,670	5,459	0	272,449	2,491,672	7,381	9,894	244,813	3,151,338
1994	118,265	5,379	0	244,671	2,485,820	7,300	9,766	241,933	3,113,134
1995	139,227	6,339	0	317,885	2,894,182	8,598	11,490	284,798	3,662,519
1996	169,333	7,703	0	354,341	2,722,241	10,460	13,978	346,366	3,624,422
1997	307,988	14,860	0	682,198	4,979,988	20,164	26,941	666,744	6,698,883
1998	374,309	18,070	0	826,288	5,834,402	24,518	32,747	810,300	7,920,634
1999	380,068	18,020	0	844,090	5,856,234	24,974	33,294	826,928	7,983,608
2000	412,322	19,251	0	914,245	5,939,190	27,068	36,074	896,380	8,244,530
2001	409,482	19,118	0	907,948	5,898,279	26,882	35,826	890,205	8,187,740
2002	405,455	18,930	0	899,018	5,840,270	26,617	35,473	881,450	8,107,213
2003	402,928	18,813	0	893,416	5,803,881	26,452	35,252	875,958	8,056,700
2004	407,993	19,049	0	904,647	5,876,837	26,784	35,695	886,969	8,157,974
2005	405,838	18,948	0	899,868	5,845,789	26,643	35,507	882,283	8,114,876
2006	399,118	18,635	0	884,968	5,748,998	26,201	34,919	867,675	7,980,514
2007	397,676	18,567	0	881,770	5,728,220	26,107	34,793	864,539	7,951,672
2008	403,168	18,824	0	893,948	5,807,331	26,467	35,273	876,479	8,061,490
2009	403,997	18,862	0	895,787	5,819,282	26,522	35,346	878,283	8,078,079
2010	404,666	18,894	0	897,270	5,828,914	26,566	35,404	879,736	8,091,450
2011	405,532	18,934	0	899,190	5,841,386	26,622	35,480	881,619	8,108,763
2012	406,284	18,969	0	900,856	5,852,212	26,672	35,546	883,253	8,123,792
2013	403,862	18,856	0	895,486	5,817,325	26,513	35,334	877,987	8,075,363
2014	419,815	19,601	0	930,859	6,047,119	27,560	36,730	912,669	8,394,353
2015	410,333	19,158	0	909,835	5,910,543	26,938	35,900	892,056	8,204,763
2016	409,041	19,098	0	906,971	5,891,932	26,853	35,787	889,247	8,178,929
2017	407,367	19,020	0	903,259	5,867,818	26,743	35,641	885,608	8,145,456
2018	407,874	19,043	0	904,383	5,875,123	26,776	35,685	886,711	8,155,595
2019	409,646	19,126	0	908,313	5,900,651	26,893	35,840	890,563	8,191,032
2020	410,678	19,174	0	910,600	5,915,507	26,960	35,930	892,806	8,211,655
2021	472,369	22,055	0	1,047,389	6,804,129	31,010	41,328	1,026,922	9,445,202
2022	354,164	16,536	0	785,291	5,101,471	23,250	30,986	769,946	7,081,644
2023	455,615	21,272	0	1,010,238	6,562,787	29,910	39,862	990,497	9,110,181
2024	396,653	18,520	0	879,502	5,713,486	26,040	34,703	862,315	7,931,219
2025	225,707	10,538	0	500,462	3,251,137	14,817	19,747	490,682	4,513,090
2026	82,165	3,836	0	182,184	1,183,520	5,394	7,189	178,624	1,642,912
2027	45,551	2,127	0	101,000	656,127	2,990	3,985	99,027	910,807
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	12,525,585	585,303	0	28,274,484	186,237,513	818,816	1,091,546	27,103,407	256,636,654

Table B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (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	64,266	57,111	27,032	7,656	44,492	2,154	55,996	16,240	151,182	39,907
1989	205,668	98,720	46,993	13,263	78,104	3,763	97,138	27,981	259,860	69,104
1990	185,010	87,808	42,449	11,905	69,970	3,385	87,327	24,956	231,650	61,851
1991	296,854	140,371	65,947	18,548	108,704	5,236	135,623	38,641	363,310	96,172
1992	402,015	234,421	89,358	25,192	147,297	7,053	183,813	52,160	491,537	130,372
1993	424,871	247,076	93,981	26,566	154,919	7,437	193,361	55,045	517,379	137,298
1994	424,023	247,222	94,502	26,865	155,776	7,431	194,191	54,968	525,394	139,422
1995	500,083	290,999	111,729	31,823	184,169	8,769	229,530	64,852	623,848	165,594
1996	606,387	353,131	135,428	38,635	223,236	10,640	278,178	78,696	760,333	201,821
1997	1,166,191	675,664	259,937	74,132	428,478	20,434	534,121	151,132	1,505,782	386,414
1998	1,404,331	816,180	312,362	91,226	514,893	24,564	1,186,683	181,777	1,805,631	475,746
1999	1,435,098	832,926	320,552	91,463	528,392	25,146	1,116,685	185,982	1,809,388	481,546
2000	1,542,605	1,888,161	345,248	98,778	569,101	27,046	1,207,668	199,974	1,954,721	519,810
2001	1,531,979	1,875,155	342,870	98,098	565,181	26,860	1,199,349	198,596	1,941,256	516,229
2002	1,516,912	1,856,713	339,498	97,133	559,622	26,596	1,187,554	196,643	1,922,164	511,152
2003	1,507,461	1,845,144	337,382	96,528	556,135	26,430	1,180,154	195,418	1,910,188	507,967
2004	1,526,410	1,868,338	341,623	97,741	563,126	26,762	1,194,989	197,874	1,934,199	514,353
2005	1,518,345	1,858,467	339,818	97,225	560,151	26,621	1,188,676	196,829	1,923,980	511,635
2006	1,493,206	1,827,696	334,192	95,615	550,876	26,180	1,168,994	193,570	1,892,124	503,164
2007	1,487,809	1,821,090	332,984	95,269	548,885	26,085	1,164,770	192,870	1,885,286	501,346
2008	1,508,357	1,846,241	337,583	96,585	556,466	26,446	1,180,856	195,534	1,911,323	508,269
2009	1,511,461	1,850,040	338,278	96,784	557,611	26,500	1,183,286	195,937	1,915,256	509,315
2010	1,513,963	1,853,103	338,837	96,944	558,534	26,544	1,185,245	196,261	1,918,427	510,158
2011	1,517,202	1,857,067	339,562	97,152	559,729	26,601	1,187,781	196,681	1,922,531	511,250
2012	1,520,014	1,860,509	340,192	97,332	560,766	26,650	1,189,982	197,045	1,926,094	512,197
2013	1,510,952	1,849,418	338,164	96,751	557,424	26,491	1,182,888	195,871	1,914,612	509,144
2014	1,570,637	1,922,473	351,522	100,573	579,443	27,538	1,229,614	203,608	1,990,243	529,256
2015	1,535,164	1,879,054	343,583	98,302	566,356	26,916	1,201,843	199,009	1,945,293	517,303
2016	1,530,330	1,873,137	342,501	97,992	564,573	26,831	1,198,059	198,383	1,939,167	515,674
2017	1,524,067	1,865,471	341,099	97,591	562,262	26,721	1,193,155	197,571	1,931,231	513,563
2018	1,525,965	1,867,793	341,524	97,713	562,962	26,754	1,194,641	197,817	1,933,635	514,203
2019	1,532,595	1,875,909	343,008	98,137	565,408	26,871	1,199,831	198,676	1,942,037	516,437
2020	1,536,453	1,880,632	343,871	98,384	566,831	26,938	1,202,852	199,176	1,946,926	517,737
2021	1,767,258	2,163,138	395,527	113,163	651,980	30,985	1,383,543	229,097	2,239,392	595,511
2022	1,325,021	1,621,837	296,551	84,846	488,830	23,231	1,037,327	171,768	1,679,009	446,491
2023	1,704,574	2,086,412	381,498	109,150	628,855	29,886	1,334,469	220,970	2,159,961	574,388
2024	1,483,982	1,816,406	332,128	95,024	547,474	26,018	1,161,774	192,374	1,880,437	500,056
2025	844,428	1,033,587	188,990	54,072	311,528	14,805	661,082	109,467	1,070,022	284,546
2026	307,399	376,259	68,799	19,684	113,406	5,390	240,656	39,849	389,523	103,584
2027	170,418	208,593	38,141	10,912	62,871	2,988	133,416	22,092	215,946	57,426
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	46,679,764	52,509,472	10,455,243	2,990,752	17,234,816	819,696	35,267,100	6,061,390	59,180,277	15,717,411

Table B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
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	24,019	2,642,354	18,118	3,150,527	1,336	552	853	2,741	0	4,317,328
1989	42,040	4,587,641	34,565	5,564,840	0	918	1,454	2,372	0	7,583,021
1990	38,023	4,037,980	34,994	4,917,308	2,535	800	1,283	4,618	0	6,750,020
1991	59,122	6,259,893	54,115	7,642,536	9,945	1,243	2,027	13,215	0	10,510,679
1992	80,131	8,435,312	72,892	10,351,553	13,671	1,710	2,806	18,187	0	14,255,669
1993	84,371	8,885,273	76,858	10,904,435	14,608	1,827	3,026	19,461	0	15,068,309
1994	85,698	8,926,755	76,794	10,959,041	14,409	1,801	3,070	19,280	0	15,145,690
1995	101,792	10,539,433	90,436	12,943,057	16,957	2,119	3,704	22,780	0	18,013,188
1996	124,074	12,810,361	109,783	15,730,703	20,640	2,580	4,621	27,841	0	21,369,059
1997	52,633	24,525,568	210,384	29,990,870	39,826	4,980	9,074	53,880	0	40,919,358
1998	96,963	29,790,514	254,016	36,954,886	48,405	6,055	11,277	65,737	0	50,037,331
1999	93,017	30,321,877	259,054	37,501,126	49,245	6,155	11,752	67,152	0	50,726,601
2000	115,027	32,491,471	276,029	41,235,639	52,940	16,067	13,118	82,125	0	55,346,277
2001	114,235	32,267,660	274,128	40,951,596	52,575	15,956	13,028	81,559	0	54,965,036
2002	113,111	31,950,308	271,432	40,548,838	52,058	15,799	12,900	80,757	0	54,424,455
2003	112,407	31,751,236	269,740	40,296,190	51,734	15,701	12,819	80,254	0	54,085,354
2004	113,820	32,150,354	273,131	40,802,720	52,384	15,898	12,980	81,262	0	54,765,215
2005	113,218	31,980,499	271,688	40,587,152	52,107	15,814	12,912	80,833	0	54,475,882
2006	111,344	31,450,988	267,190	39,915,139	51,245	15,553	12,698	79,496	0	53,573,909
2007	110,941	31,337,321	266,224	39,770,880	51,059	15,496	12,652	79,207	0	53,380,284
2008	112,474	31,770,113	269,901	40,320,148	51,764	15,710	12,827	80,301	0	54,117,508
2009	112,705	31,835,489	270,456	40,403,118	51,871	15,743	12,853	80,467	0	54,228,872
2010	112,892	31,888,187	270,904	40,469,999	51,957	15,769	12,875	80,601	0	54,318,640
2011	113,133	31,956,413	271,483	40,556,585	52,068	15,802	12,902	80,772	0	54,434,854
2012	113,343	32,015,638	271,987	40,631,749	52,165	15,832	12,926	80,923	0	54,535,742
2013	112,667	31,824,781	270,365	40,389,528	51,854	15,737	12,849	80,440	0	54,210,633
2014	117,118	33,081,915	281,045	41,984,985	53,902	16,359	13,357	83,618	0	56,352,048
2015	114,472	32,334,753	274,698	41,036,746	52,684	15,990	13,055	81,729	0	55,079,322
2016	114,112	32,232,936	273,833	40,907,528	52,519	15,939	13,014	81,472	0	54,905,888
2017	113,645	32,101,017	272,712	40,740,105	52,304	15,874	12,961	81,139	0	54,681,177
2018	113,786	32,140,982	273,051	40,790,826	52,369	15,894	12,977	81,240	0	54,749,252
2019	114,281	32,280,633	274,238	40,968,061	52,596	15,963	13,033	81,592	0	54,987,134
2020	114,569	32,361,906	274,928	41,071,203	52,729	16,003	13,066	81,798	0	55,125,573
2021	131,779	37,223,281	316,228	47,240,882	60,650	18,407	15,029	94,086	0	63,406,487
2022	98,803	27,908,569	237,095	35,419,378	45,473	13,801	11,268	70,542	0	47,539,719
2023	127,105	35,902,974	305,011	45,565,253	58,498	17,754	14,496	90,748	0	61,157,465
2024	110,656	31,256,716	265,539	39,668,584	50,928	15,456	12,620	79,004	0	53,242,985
2025	62,966	17,785,965	151,099	22,572,557	28,979	8,795	7,181	44,955	0	30,296,777
2026	22,922	6,474,671	55,005	8,217,147	10,549	3,202	2,614	16,365	0	11,029,015
2027	12,708	3,589,467	30,494	4,555,472	5,848	1,775	1,449	9,072	0	6,114,330
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	3,832,122	985,109,204	8,371,643	1,244,228,890	1,589,386	442,829	391,406	2,423,621	0	1,674,226,086

Table B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (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	151,050	190,362	449,124	790,536	0	0	0
1964	0	0	0	170,658	277,596	622,888	1,071,142	6,059	20,500	26,559
1965	0	0	0	245,544	404,537	1,159,913	1,809,994	11,426	31,741	43,167
1966	18,080	0	18,080	271,642	421,959	1,414,916	2,108,517	20,183	49,661	69,843
1967	41,609	0	41,609	361,458	548,750	1,865,251	2,775,459	37,976	84,159	122,136
1968	128,726	0	128,726	411,082	633,477	2,180,615	3,225,174	63,525	133,082	196,607
1969	254,848	0	254,848	477,168	583,758	2,300,966	3,361,892	118,158	235,273	353,431
1970	277,683	0	277,683	541,470	640,631	2,790,226	3,972,327	130,874	259,885	390,759
1971	227,611	0	227,611	478,792	675,530	2,809,283	3,963,605	131,691	262,454	394,145
1972	225,117	0	225,117	608,751	822,733	3,030,018	4,461,502	137,449	274,500	411,949
1973	221,231	31,399	252,630	594,479	716,828	3,123,061	4,434,368	134,245	269,336	403,581
1974	240,640	32,973	273,613	634,616	747,270	3,327,298	4,709,184	135,253	271,893	407,146
1975	237,608	36,328	273,936	691,497	793,393	3,216,324	4,701,214	151,575	302,781	454,356
1976	271,444	40,877	312,321	804,080	943,803	3,364,821	5,112,704	260,651	505,761	766,412
1977	293,781	45,140	338,921	771,765	922,543	3,305,746	5,000,054	270,379	527,189	797,568
1978	274,027	49,225	323,252	859,380	936,185	3,715,300	5,510,865	277,016	542,744	819,761
1979	289,639	53,391	343,030	954,425	1,010,020	3,822,756	5,787,201	274,806	541,940	816,746
1980	311,013	86,136	397,149	1,105,977	1,174,310	4,122,691	6,402,978	312,242	595,864	908,106
1981	347,960	112,925	460,885	1,211,201	1,349,749	4,510,962	7,071,912	337,094	652,246	989,340
1982	438,523	141,929	580,452	1,291,818	1,369,953	4,944,705	7,606,476	358,260	738,323	1,096,583
1983	354,997	163,422	518,419	1,161,162	1,260,520	4,913,475	7,335,157	387,222	757,966	1,145,188
1984	467,590	246,884	714,474	1,468,057	1,479,556	6,876,330	9,823,943	439,386	856,857	1,296,243
1985	736,438	386,603	1,123,041	1,963,103	2,228,079	7,805,677	11,996,859	533,755	1,031,828	1,565,583
1986	1,120,736	714,803	1,835,539	1,828,197	2,014,638	8,197,404	12,040,239	566,827	1,094,609	1,661,436
1987	1,774,876	1,583,464	3,358,340	2,323,966	2,506,393	7,983,879	12,814,238	601,023	1,206,322	1,807,345
1988	2,351,092	2,526,416	4,877,508	2,381,464	2,772,548	7,826,782	12,980,794	703,380	1,497,047	2,200,427
1989	2,550,409	3,704,065	6,254,474	2,365,007	2,516,594	7,583,481	12,465,082	803,090	1,872,793	2,675,883
1990	2,899,660	3,848,855	6,748,515	2,795,717	2,928,878	8,354,964	14,079,559	964,947	2,106,604	3,071,551
1991	2,941,534	4,172,080	7,113,614	2,063,516	2,384,490	6,432,696	10,880,702	1,011,515	2,427,337	3,438,852
1992	2,799,115	4,146,807	6,945,922	2,529,526	2,927,653	7,659,578	13,116,757	1,150,716	2,587,483	3,738,198
1993	2,857,698	4,175,126	7,032,824	3,382,824	2,978,495	8,854,748	15,216,067	1,218,714	2,789,555	4,008,269
1994	2,988,582	4,226,415	7,214,997	3,413,780	3,585,405	9,612,968	16,612,153	1,376,569	3,628,319	5,004,888
1995	2,965,028	4,409,358	7,374,386	3,660,602	3,312,383	8,392,654	15,365,639	1,718,195	6,446,404	8,164,599
1996	3,036,883	4,880,808	7,917,691	3,232,099	3,150,377	9,133,889	15,516,365	2,762,830	15,637,952	18,400,782
1997	3,145,369	4,945,964	8,091,333	3,644,709	3,311,181	9,798,451	16,754,341	3,931,760	26,219,875	30,151,635
1998	3,164,977	4,962,116	8,127,093	3,396,179	3,472,261	9,722,970	16,591,410	4,115,253	29,644,436	33,759,689
1999	3,744,927	6,076,138	9,821,065	4,953,270	5,192,094	12,925,914	23,071,278	5,054,038	32,878,495	37,932,533
2000	3,926,819	6,034,717	9,961,536	5,010,643	4,703,541	12,780,784	22,494,968	6,202,362	34,458,834	40,661,196
2001	3,892,017	5,866,418	9,758,435	5,080,186	4,762,252	12,948,485	22,790,923	6,143,386	35,006,099	41,149,485
2002	3,964,675	5,927,242	9,891,917	4,953,209	4,657,701	12,681,788	22,292,698	6,045,967	35,011,695	41,057,662
2003	3,948,448	5,892,771	9,841,219	4,837,668	4,606,527	12,428,362	21,872,557	6,049,009	34,777,469	40,826,478
2004	3,942,459	5,923,500	9,865,959	4,766,614	4,633,288	12,258,452	21,658,354	6,532,198	34,648,985	41,181,182
2005	3,957,071	5,923,813	9,880,884	4,771,079	4,636,963	12,266,190	21,674,232	6,539,691	34,654,202	41,193,892
2006	3,940,136	5,886,440	9,826,576	4,681,171	4,553,616	12,064,595	21,299,382	6,412,123	34,395,985	40,808,107
2007	3,953,002	5,889,113	9,842,115	4,682,742	4,554,784	12,066,716	21,304,242	6,415,453	34,396,546	40,811,998
2008	4,001,122	5,933,668	9,934,790	4,792,183	4,655,729	12,309,615	21,757,527	6,572,242	34,702,981	41,275,222
2009	4,017,293	5,939,570	9,956,863	4,797,360	4,660,614	12,321,627	21,779,601	6,579,315	34,719,085	41,298,399
2010	4,019,954	5,929,467	9,949,421	4,759,690	4,626,343	12,240,329	21,626,362	6,523,628	34,620,227	41,143,854
2011	4,048,897	5,953,026	10,001,923	4,803,079	4,666,437	12,338,271	21,807,787	6,582,938	34,731,749	41,314,686
2012	4,064,026	5,957,699	10,021,725	4,804,717	4,668,075	12,342,520	21,815,312	6,584,847	34,738,148	41,322,994
2013	3,991,019	5,873,136	9,864,155	4,419,008	4,311,085	11,377,034	20,107,127	6,184,104	33,999,922	40,184,025
2014	3,994,813	5,875,977	9,870,790	4,310,575	4,181,984	11,067,243	19,559,802	6,060,650	33,827,533	39,888,183
2015	3,995,549	5,845,307	9,840,856	4,205,153	4,029,553	10,542,393	18,777,099	5,962,599	33,611,182	39,573,781
2016	3,988,722	5,830,151	9,818,873	4,146,309	3,962,118	10,280,736	18,389,163	5,896,426	33,483,745	39,380,171
2017	3,990,994	5,830,666	9,821,660	4,118,333	3,934,483	10,171,647	18,224,463	5,884,366	33,453,293	39,337,660
2018	3,963,083	5,858,054	9,821,137	4,145,048	3,955,968	10,198,211	18,299,227	5,970,500	33,610,076	39,580,577
2019	3,931,849	5,845,197	9,777,046	4,067,629	3,884,992	10,012,657	17,965,278	5,908,454	33,502,368	39,410,821
2020	3,947,815	5,840,958	9,788,773	4,038,439	3,856,273	9,941,357	17,836,069	5,883,683	33,460,008	39,343,691
2021	3,993,895	5,916,848	9,910,743	4,062,912	3,889,729	10,050,095	18,002,736	5,882,752	33,694,401	39,577,152
2022	3,912,614	5,776,473	9,689,087	4,019,635	3,827,850	9,845,958	17,693,443	5,896,814	33,264,200	39,161,014
2023	3,977,661	5,862,930	9,840,591	4,049,945	3,874,328	10,001,894	17,926,167	5,875,619	33,614,776	39,490,395
2024	3,935,053	5,791,466	9,726,519	4,028,462	3,843,609	9,900,915	17,772,986	5,883,215	33,401,261	39,284,475
2025	3,753,904	5,530,712	9,284,616	3,822,881	3,623,568	9,297,044	16,743,493	5,694,276	32,399,174	38,093,450
2026	3,619,591	5,324,395	8,943,986	3,689,501	3,475,044	8,876,714	16,041,259	5,486,877	31,465,314	36,952,191
2027	3,572,156	5,257,692	8,829,848	3,625,697	3,409,787	8,702,984	15,738,468	5,417,979	31,195,508	36,613,487
2028	3,542,012	5,203,280	8,745,292	3,616,596	3,392,853	8,640,259	15,649,708	5,432,346	31,043,151	36,475,497
2029	3,520,080	5,181,445	8,701,525	3,567,364	3,347,847	8,532,178	15,447,389	5,364,379	30,916,015	36,280,394
2030	3,501,694	5,158,728	8,660,422	3,543,673	3,326,144	8,480,060	15,349,877	5,331,834	30,852,438	36,184,271
2031	3,520,197	5,169,771	8,689,968	3,616,056	3,392,160	8,636,846	15,645,062	5,442,772	31,040,389	36,483,161
2032	3,505,521	5,147,294	8,652,815	3,610,150	3,386,719	8,623,609	15,620,478	5,432,364	31,026,705	36,459,068
2033	3,444,957	5,071,628	8,516,585	3,529,034	3,312,592	8,446,714	15,288,340	5,313,735	30,813,761	36,127,496
2034	3,401,465	5,018,252	8,419,717	3,572,711	3,352,215	8,539,741	15,464,667	5,386,481	30,943,487	36,329,969
2035	3,282,427	4,888,479	8,170,906	3,591,724	3,369,509	8,580,102	15,541,335	5,423,995	31,009,449	36,433,443
Total	181,962,441	259,955,930	441,918,371	211,348,957	208,554,999	577,946,849	997,850,805	244,707,456	1,335,473,375	1,580,180,830

Table B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (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	2,727	0	0	0	0	0	2,727
1965	0	0	6,034	73,631	0	0	0	0	79,665
1966	0	0	12,049	137,442	0	0	0	0	149,491
1967	0	0	26,278	267,828	0	0	0	0	294,106
1968	227,026	19,360	54,628	445,749	1,711,420	16,051	19,600	308,115	2,801,949
1969	243,245	10,867	87,621	525,451	2,732,864	15,687	19,332	461,708	4,096,775
1970	308,588	34,311	94,721	574,380	3,883,652	20,258	30,350	523,434	5,469,694
1971	330,324	37,046	95,741	606,287	5,206,670	25,983	34,628	715,116	7,051,795
1972	384,306	40,305	98,837	632,020	7,178,084	25,262	63,712	1,992,716	10,415,242
1973	401,866	38,922	97,599	1,026,298	7,309,130	27,592	39,207	784,770	9,725,384
1974	511,889	40,136	98,509	1,145,273	8,021,282	28,306	42,497	1,046,950	10,934,842
1975	685,411	40,583	106,755	1,197,625	9,405,151	29,983	48,112	1,560,961	13,074,581
1976	723,661	43,104	108,134	1,324,408	10,651,029	31,404	52,039	1,445,350	14,379,129
1977	583,762	39,014	112,603	1,367,920	10,966,142	33,155	54,151	1,141,018	14,297,765
1978	702,943	41,282	115,577	1,567,068	13,305,413	37,575	58,981	1,175,253	17,004,092
1979	787,194	47,873	114,312	1,670,341	15,389,382	41,719	70,614	1,731,686	19,853,121
1980	968,848	49,604	126,008	1,771,798	17,034,877	46,691	94,920	1,663,922	21,756,668
1981	1,217,560	84,045	134,233	2,432,604	22,636,933	65,138	100,612	2,288,478	28,959,603
1982	1,253,642	70,148	135,118	2,526,039	25,034,104	69,295	108,247	2,282,329	31,478,922
1983	1,188,112	52,495	149,260	2,085,655	24,682,229	74,092	89,103	507,252	28,828,198
1984	1,495,843	28,345	164,496	3,395,218	33,384,621	92,853	121,401	1,539,495	40,222,272
1985	1,783,033	130,421	186,413	3,914,487	39,599,937	116,668	140,149	2,837,449	48,708,557
1986	2,016,467	79,303	180,514	4,081,837	43,491,539	135,377	153,139	3,660,391	53,798,567
1987	1,891,921	95,250	179,952	4,573,737	42,767,873	135,998	151,387	3,753,836	53,549,954
1988	1,995,750	110,497	193,798	4,721,474	44,635,874	136,596	146,144	3,900,440	55,840,573
1989	2,132,516	101,775	188,063	4,680,897	46,908,193	135,739	166,382	4,391,273	58,704,838
1990	2,048,094	86,916	221,272	4,828,545	45,662,683	119,732	148,607	3,967,251	57,083,100
1991	1,719,646	80,207	220,289	4,538,614	37,542,299	102,446	134,595	3,507,843	47,845,939
1992	2,242,690	105,576	241,507	5,549,670	48,745,328	142,786	175,623	4,547,908	61,751,088
1993	2,465,629	120,098	265,128	5,807,605	54,669,022	160,133	195,246	5,303,897	68,986,758
1994	2,269,550	107,559	306,244	5,212,372	52,112,974	144,145	178,001	4,674,370	65,005,215
1995	2,863,658	115,309	304,150	6,621,709	60,543,867	179,170	209,943	5,527,682	76,365,488
1996	2,037,319	124,146	387,874	6,398,856	58,395,448	174,978	188,330	6,999,514	74,706,465
1997	2,920,937	107,232	279,602	6,953,899	60,121,131	145,502	224,646	5,022,578	75,775,527
1998	2,848,682	130,677	354,784	6,331,813	57,935,461	155,974	224,380	5,457,170	73,438,941
1999	3,303,289	161,119	394,144	7,997,138	68,688,693	214,339	261,512	9,175,709	90,195,943
2000	3,116,949	157,298	382,333	7,445,408	63,561,682	213,545	260,902	6,836,309	81,974,426
2001	3,122,802	157,691	365,752	7,480,763	63,333,488	215,070	261,092	6,851,702	81,788,360
2002	3,060,937	154,399	370,384	7,370,196	62,267,543	211,781	257,677	6,720,704	80,413,621
2003	3,024,423	152,371	370,620	7,321,053	61,303,625	209,071	254,925	6,639,673	79,275,761
2004	3,000,524	151,055	363,679	7,209,254	60,890,185	207,538	253,603	6,588,960	78,664,798
2005	3,000,130	151,054	363,690	7,204,396	60,922,773	207,543	253,571	6,588,216	78,691,373
2006	2,955,466	148,612	363,523	7,087,571	60,013,691	204,268	250,287	6,489,456	77,512,874
2007	2,955,784	148,641	363,559	7,090,887	60,022,405	204,302	250,273	6,490,205	77,526,056
2008	3,006,426	151,437	363,583	7,213,498	61,120,703	208,045	254,031	6,602,380	78,920,103
2009	3,009,438	151,597	363,607	7,222,155	61,174,829	208,263	254,254	6,609,019	78,993,162
2010	2,992,708	150,652	363,543	7,177,662	60,808,606	207,007	253,070	6,571,876	78,525,124
2011	3,012,639	151,751	364,625	7,231,977	61,228,022	208,444	254,449	6,615,676	79,067,583
2012	3,014,027	151,820	364,644	7,236,396	61,247,291	208,541	254,555	6,618,712	79,095,986
2013	2,895,644	145,188	364,778	6,959,329	58,536,264	199,684	245,841	6,355,909	75,702,637
2014	2,875,454	143,898	362,257	6,920,194	57,881,887	198,011	244,524	6,310,233	74,936,458
2015	2,841,007	142,052	358,945	6,765,007	57,179,534	195,518	241,880	6,234,192	73,958,135
2016	2,822,449	141,022	352,882	6,653,676	56,784,033	194,141	240,527	6,193,071	73,381,801
2017	2,823,307	141,086	338,686	6,527,906	56,807,564	194,221	240,552	6,195,037	73,268,359
2018	2,855,087	142,865	316,134	6,497,191	57,478,589	188,076	242,813	6,265,494	73,986,249
2019	2,837,911	141,884	307,564	6,390,159	57,102,041	186,273	241,624	6,227,328	73,434,784
2020	2,831,415	141,508	305,717	6,339,488	56,956,923	185,528	241,182	6,212,873	73,214,634
2021	2,876,427	143,453	304,544	6,410,154	57,487,277	188,189	245,390	6,309,993	73,965,427
2022	2,795,125	140,007	304,112	6,238,511	56,567,970	183,117	237,663	6,134,860	72,601,365
2023	2,862,117	142,808	303,500	6,364,529	57,301,970	187,175	244,103	6,278,996	73,685,198
2024	2,821,715	141,099	303,073	6,282,167	56,846,590	184,673	240,259	6,191,971	73,011,547
2025	2,638,587	132,431	302,487	5,869,779	54,114,737	172,516	224,425	5,793,303	69,248,265
2026	2,502,619	126,155	302,256	5,570,090	52,207,986	163,621	212,404	5,498,040	66,583,171
2027	2,454,903	123,822	301,557	5,455,677	51,444,559	160,348	208,415	5,393,826	65,543,107
2028	2,428,040	122,745	299,215	5,403,544	51,185,559	158,727	205,753	5,336,244	65,139,827
2029	2,406,985	121,563	298,796	5,343,152	50,738,533	157,094	204,260	5,289,552	64,559,935
2030	2,397,135	121,009	298,457	5,313,301	50,529,470	156,290	203,563	5,267,707	64,286,932
2031	2,433,693	123,062	297,051	5,394,453	51,305,236	158,629	206,155	5,348,786	65,267,065
2032	2,430,181	122,864	297,023	5,387,267	51,231,027	158,382	205,906	5,340,995	65,173,645
2033	2,392,927	120,773	296,502	5,280,985	50,440,117	155,467	203,263	5,258,373	64,148,407
2034	2,416,342	122,088	296,002	5,338,368	50,937,064	157,073	204,924	5,310,299	64,782,160
2035	2,428,708	122,782	295,333	5,363,006	51,199,765	157,765	205,799	5,337,727	65,110,885
Total	146,893,432	7,418,067	17,815,387	339,344,837	3,030,512,843	9,634,563	12,249,504	314,203,561	3,878,072,194

Table B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,350	0	0	0	0	0	0	0	51,775	0
1964	62,920	27,471	14,440	4,374	37,191	1,144	28,462	8,212	82,882	35,018
1965	118,700	53,051	25,116	7,200	40,804	2,084	50,360	15,235	135,181	35,373
1966	215,956	101,346	44,767	12,489	73,212	3,757	90,473	27,701	232,692	61,514
1967	417,814	210,983	86,188	23,491	141,524	7,291	175,317	54,067	433,698	115,666
1968	736,544	491,545	152,802	41,540	251,383	12,879	310,927	95,534	782,746	209,081
1969	1,059,784	742,615	225,475	61,271	371,233	18,707	458,451	138,164	1,206,739	321,996
1970	1,378,037	942,719	315,497	89,765	519,703	25,248	632,482	184,974	1,779,532	467,926
1971	1,705,581	1,137,235	432,865	128,457	713,269	31,859	856,464	231,446	2,540,123	659,906
1972	2,183,229	1,382,265	603,791	185,978	990,535	43,799	1,177,918	287,800	3,760,710	950,872
1973	2,334,901	1,430,641	747,889	191,103	1,217,760	46,087	1,268,352	313,630	4,028,912	961,622
1974	2,455,334	1,526,126	771,389	204,192	1,257,654	48,962	1,326,890	331,888	4,466,130	1,105,676
1975	2,672,660	1,617,048	816,733	219,413	1,332,953	53,271	1,412,319	355,460	4,641,355	1,211,464
1976	3,136,988	1,653,678	873,770	232,254	1,425,675	57,761	1,488,354	381,467	4,840,950	1,282,872
1977	3,118,502	1,741,475	774,251	245,242	1,267,942	54,235	1,575,345	406,814	5,096,923	1,348,996
1978	3,569,417	1,874,905	974,417	255,736	1,570,219	56,846	1,622,167	420,224	5,095,414	1,379,072
1979	4,245,710	1,954,550	1,060,062	268,078	1,692,966	60,329	1,797,618	449,970	5,139,455	1,343,009
1980	4,931,540	2,108,678	1,169,495	295,665	1,893,810	67,654	1,969,165	499,268	5,650,461	1,482,601
1981	5,759,081	2,562,969	1,324,444	329,156	2,144,289	100,933	2,286,875	603,518	6,466,723	1,689,567
1982	5,514,353	2,726,326	1,412,161	347,057	2,288,085	82,330	2,261,864	642,230	6,757,398	1,932,384
1983	6,262,284	2,796,561	1,932,387	381,140	3,123,301	88,433	2,455,629	658,931	6,968,861	1,809,801
1984	7,634,151	3,910,912	3,033,996	498,380	4,881,563	96,500	2,724,477	727,855	8,064,946	2,602,214
1985	9,516,692	4,327,968	3,871,692	603,624	6,223,387	104,145	2,922,990	936,758	8,920,516	2,694,767
1986	9,434,843	4,977,814	4,328,505	648,400	6,962,015	130,316	3,089,501	1,224,792	9,153,327	3,402,815
1987	9,471,893	4,836,334	4,197,597	679,220	6,840,583	241,041	3,154,472	1,256,897	10,563,255	3,405,127
1988	9,068,185	5,020,108	4,254,817	705,875	7,007,873	159,063	3,331,753	1,045,583	11,122,985	3,279,053
1989	10,964,144	5,032,837	3,965,569	693,287	6,596,544	211,018	3,415,423	1,749,635	10,853,155	3,466,308
1990	12,341,580	5,494,873	4,656,208	730,905	7,678,871	331,494	3,642,366	1,955,131	11,776,123	4,238,113
1991	9,216,403	4,363,625	3,212,934	692,060	5,298,370	221,450	4,515,835	1,643,849	11,198,319	3,669,395
1992	11,767,538	5,802,581	3,366,564	616,152	5,551,638	175,339	5,496,566	1,534,767	11,255,138	3,725,895
1993	12,189,528	5,454,221	3,574,741	621,435	5,895,021	212,446	5,392,366	1,757,906	12,247,900	4,083,489
1994	14,242,614	6,010,211	3,624,112	706,487	5,976,269	278,347	6,398,397	2,092,738	13,273,648	4,925,684
1995	14,137,995	6,399,654	4,440,481	672,068	7,322,947	212,965	5,574,212	1,957,997	12,693,095	4,616,034
1996	14,262,299	6,486,834	7,128,628	676,271	11,756,697	205,343	5,413,087	2,252,973	13,114,339	4,639,169
1997	15,641,122	6,915,302	7,111,863	803,402	8,757,287	217,491	6,505,061	2,414,077	15,725,715	5,256,177
1998	14,610,888	6,657,951	6,844,177	795,580	7,628,935	225,217	8,575,788	2,087,260	16,050,688	4,720,902
1999	21,927,531	8,588,629	5,237,409	1,105,885	8,637,098	495,486	9,392,940	3,192,709	18,627,757	6,320,936
2000	23,260,375	14,714,623	4,850,965	1,268,095	7,999,721	443,133	10,878,488	3,315,518	24,007,497	6,239,826
2001	23,836,517	15,132,621	4,904,696	1,276,464	8,088,361	450,061	10,770,176	3,368,580	25,190,036	6,261,161
2002	23,115,023	14,493,465	4,783,381	1,225,746	7,888,281	439,364	10,550,331	3,288,112	24,557,756	6,031,784
2003	22,977,997	14,575,504	4,618,167	1,222,673	7,615,780	426,712	10,966,532	3,181,702	24,177,142	6,016,456
2004	22,655,769	14,614,458	4,520,566	1,228,814	7,454,801	418,759	10,829,975	3,122,194	25,722,533	5,862,253
2005	22,713,710	14,754,754	4,553,298	1,258,329	7,508,811	419,398	11,412,708	3,127,032	26,284,998	5,931,821
2006	22,012,065	14,309,447	4,349,016	1,191,529	7,171,859	404,360	11,708,951	3,014,046	24,898,077	5,604,719
2007	22,261,767	14,607,100	4,367,327	1,219,846	7,202,075	405,033	12,264,371	3,019,097	25,201,497	5,679,699
2008	23,274,767	15,109,102	4,574,551	1,253,652	7,543,850	422,619	13,222,969	3,151,352	26,024,609	6,517,126
2009	23,562,610	15,176,778	4,588,093	1,274,805	7,566,182	423,576	13,838,294	3,158,509	26,184,211	5,861,104
2010	23,413,819	14,917,828	4,509,659	1,255,561	7,436,816	417,044	14,245,061	3,109,393	25,766,043	5,762,256
2011	24,074,545	15,265,058	4,598,221	1,294,317	7,582,893	423,996	15,039,766	3,161,585	26,245,736	5,898,301
2012	24,343,324	15,296,022	4,598,669	1,302,710	7,583,625	424,384	15,645,204	3,164,489	26,190,613	5,897,378
2013	22,058,953	14,373,447	4,065,025	1,221,942	6,690,164	380,055	14,648,749	2,831,050	23,606,682	5,596,572
2014	21,387,519	14,341,355	3,913,219	1,229,044	6,453,689	366,108	14,677,514	2,726,293	23,271,106	5,618,709
2015	20,737,785	13,997,214	3,770,296	1,185,175	6,217,963	355,111	14,248,262	2,643,711	22,331,866	5,447,173
2016	20,249,610	13,682,794	3,687,308	1,184,810	6,081,092	346,926	13,930,103	2,582,321	22,283,608	5,417,048
2017	20,104,595	13,553,204	3,648,456	1,164,315	6,017,011	344,340	13,831,674	2,563,061	21,880,363	5,339,276
2018	20,571,353	13,748,800	3,745,198	1,191,107	6,176,588	351,836	14,114,618	2,619,956	22,311,427	5,477,584
2019	19,856,916	13,119,302	3,598,719	1,161,586	5,935,004	339,503	13,650,052	2,528,399	21,717,717	5,281,337
2020	19,390,021	12,724,759	3,472,963	1,112,211	5,727,587	330,492	13,328,268	2,463,008	20,790,033	5,056,866
2021	18,985,713	12,460,044	3,337,972	1,061,943	5,504,900	322,813	13,027,014	2,407,998	19,842,114	4,833,491
2022	19,275,041	12,382,217	3,364,380	1,071,837	5,548,561	326,970	13,114,833	2,441,007	19,853,579	4,841,733
2023	18,807,359	12,244,147	3,282,595	1,063,068	5,413,590	319,361	12,850,116	2,383,503	19,707,753	4,768,943
2024	18,998,277	12,253,362	3,299,060	1,052,377	5,440,794	322,329	12,941,134	2,406,332	19,463,160	4,730,958
2025	18,047,975	11,232,811	3,084,455	994,862	5,086,969	305,914	12,223,829	2,284,422	18,344,361	4,445,075
2026	17,687,699	10,750,633	3,001,070	980,194	4,949,570	299,403	11,903,083	2,236,814	17,983,008	4,334,402
2027	17,265,940	10,256,619	2,904,141	941,239	4,789,726	292,243	11,602,912	2,183,344	17,244,037	4,157,482
2028	17,525,251	10,567,527	2,937,150	940,805	4,844,196	296,389	11,740,267	2,214,954	17,212,196	4,165,457
2029	17,026,169	9,978,705	2,855,098	939,439	4,708,878	288,070	11,414,790	2,152,434	17,189,044	4,122,221
2030	16,782,858	9,789,809	2,811,065	929,872	4,636,259	284,015	11,257,172	2,121,992	17,011,307	4,070,435
2031	17,523,345	10,169,741	2,929,276	932,879	4,831,221	296,282	11,742,818	2,214,325	17,059,383	4,135,655
2032	17,453,845	10,289,027	2,937,474	959,055	4,844,752	295,119	11,700,995	2,205,610	17,538,459	4,222,279
2033	16,520,422	9,405,539	2,742,565	897,536	4,523,271	279,560	11,108,166	2,088,683	16,435,783	3,938,222
2034	16,948,494	9,796,872	2,827,315	915,782	4,663,058	286,674	11,409,259	2,142,177	16,756,465	4,032,889
2035	17,174,342	10,009,873	2,899,245	962,932	4,781,716	290,331	11,570,227	2,170,528	17,595,930	4,211,828
Total	980,221,861	581,456,602	221,537,886	55,139,183	357,878,220	17,219,553	556,199,347	129,730,991	1,042,679,705	269,260,013

Table B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
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	691,434	0	776,559	0	0	0	0	55,786	1,622,881
1964	21,755	1,261,586	9,385	1,594,840	0	0	0	0	84,035	2,779,303
1965	21,884	2,182,391	17,781	2,705,160	0	0	405	405	129,109	4,767,500
1966	37,995	3,903,336	33,453	4,838,691	0	0	565	565	148,449	7,333,636
1967	71,340	7,699,872	68,210	9,505,461	0	0	563	563	204,794	12,944,128
1968	129,009	15,329,328	142,909	18,686,227	0	1,050	1,440	2,490	279,427	25,320,600
1969	198,915	23,170,465	215,370	28,189,185	0	1,225	4,123	5,348	349,372	36,610,851
1970	289,850	30,640,209	273,809	37,539,751	0	3,848	17,128	20,976	386,449	48,057,639
1971	409,633	39,988,560	342,677	49,178,075	0	4,546	19,200	23,746	376,010	61,214,987
1972	537,544	55,027,029	422,584	67,554,054	0	4,929	21,164	26,093	401,525	83,495,482
1973	588,339	59,628,501	435,937	73,193,674	0	7,059	21,792	28,851	376,003	88,414,491
1974	611,808	66,047,869	455,859	80,609,777	0	8,336	22,422	30,758	398,980	97,364,300
1975	645,018	71,871,493	478,703	87,327,890	0	9,416	23,536	32,952	408,199	106,273,128
1976	668,719	74,949,263	475,883	91,467,634	0	7,004	23,270	30,274	430,790	112,499,264
1977	696,926	73,379,384	507,365	90,213,400	0	16,917	24,073	40,990	423,530	111,112,228
1978	709,525	82,052,270	523,605	100,103,817	0	12,635	24,238	36,873	426,776	124,225,436
1979	713,299	83,701,912	526,752	102,953,710	0	16,575	28,365	44,940	446,818	130,245,566
1980	862,737	93,980,734	583,914	115,495,722	0	19,834	26,575	46,409	507,637	145,514,669
1981	947,391	112,332,074	672,976	137,219,996	0	21,682	34,577	56,259	517,203	175,275,198
1982	1,021,872	117,305,561	728,079	143,019,700	0	16,117	43,012	59,129	505,367	184,346,629
1983	1,076,853	119,089,454	854,625	147,498,260	0	15,202	27,074	42,276	553,237	185,920,735
1984	1,213,196	157,723,872	944,959	194,057,021	20,590	15,442	28,687	64,719	564,376	246,743,048
1985	1,292,122	195,168,964	989,783	237,573,408	24,050	16,976	32,129	73,155	681,487	301,722,090
1986	1,346,330	218,539,826	1,058,735	264,297,219	31,753	18,145	33,418	83,316	620,303	334,336,619
1987	1,382,179	205,095,020	1,056,733	252,180,351	37,071	17,794	33,604	88,469	687,024	324,485,721
1988	1,470,077	221,923,582	1,124,563	269,513,517	48,058	19,117	35,674	102,849	708,693	346,224,361
1989	1,511,681	230,778,180	1,232,941	280,470,722	61,184	20,809	38,074	120,067	768,602	361,459,668
1990	1,632,991	277,560,653	1,854,577	333,893,885	66,041	20,855	38,725	125,621	821,772	415,824,003
1991	1,736,392	222,658,026	1,552,770	269,979,428	180,212	22,526	41,290	244,028	567,763	340,070,326
1992	1,798,527	246,118,494	1,503,735	298,712,934	208,216	26,028	45,657	279,901	804,830	385,349,630
1993	1,966,925	220,229,756	1,553,001	275,178,735	209,613	26,203	46,501	282,317	965,343	371,670,313
1994	2,011,111	260,271,032	1,473,795	321,284,445	201,284	25,161	46,872	273,317	977,973	416,372,988
1995	2,065,218	228,808,206	1,571,744	290,472,616	216,944	27,118	50,339	294,401	904,950	398,942,079
1996	1,720,863	234,071,535	1,607,572	303,335,610	217,250	27,156	52,000	296,406	941,157	421,114,476
1997	1,865,999	261,439,205	1,882,917	334,535,618	254,744	32,153	60,119	347,016	805,926	466,461,396
1998	2,033,391	249,917,359	1,952,877	322,101,013	155,864	33,411	63,817	253,092	839,460	455,110,698
1999	2,175,454	336,162,808	2,178,589	424,043,231	275,572	34,446	67,438	377,456	1,020,127	586,461,633
2000	3,579,465	369,515,382	2,883,428	472,956,516	282,832	85,274	70,549	438,655	1,086,565	629,573,862
2001	4,864,706	372,550,912	2,914,374	479,608,666	282,467	674,501	71,644	1,028,612	1,126,147	637,250,627
2002	4,809,104	345,252,807	2,830,453	449,265,608	281,950	674,344	72,740	1,029,034	1,135,372	605,085,912
2003	4,866,909	348,509,953	2,761,859	451,917,387	281,626	674,246	74,078	1,029,950	1,135,982	605,899,334
2004	4,873,957	349,182,308	3,494,470	453,980,858	282,276	674,443	75,658	1,032,377	1,111,254	607,494,782
2005	5,134,131	354,390,765	3,513,639	461,003,395	281,999	674,359	77,009	1,033,367	1,111,147	614,588,290
2006	5,052,665	340,085,029	3,359,636	443,161,400	281,137	674,098	78,450	1,033,685	1,110,609	594,752,633
2007	5,833,531	344,226,659	3,369,359	449,657,362	280,951	674,041	80,059	1,035,051	1,110,725	601,287,549
2008	6,209,423	358,877,591	3,535,526	469,717,138	281,656	674,255	81,890	1,037,801	1,110,800	623,753,381
2009	6,230,855	362,123,153	3,545,400	473,533,571	281,763	674,288	83,571	1,039,622	1,110,882	627,712,100
2010	6,163,598	358,730,773	3,483,941	469,211,793	281,849	674,314	85,248	1,041,411	1,110,673	622,608,638
2011	6,239,818	366,960,562	3,550,289	480,335,088	281,960	674,347	87,167	1,043,474	1,114,532	634,685,073
2012	6,233,105	369,091,653	3,551,166	483,322,343	282,057	674,377	89,083	1,045,517	1,114,598	637,738,475
2013	5,807,450	336,336,999	3,140,014	440,757,103	281,746	674,282	91,134	1,047,162	1,071,862	588,734,071
2014	5,727,951	329,224,881	3,010,098	431,947,487	283,794	674,904	93,771	1,052,469	1,045,584	578,300,772
2015	5,589,520	320,211,624	2,905,174	419,640,875	282,576	674,535	95,429	1,052,540	1,015,490	563,858,776
2016	5,565,362	314,986,091	2,832,170	412,829,244	282,411	674,484	97,592	1,054,487	998,373	555,852,112
2017	5,509,658	313,019,368	2,804,109	409,779,431	282,196	674,419	97,541	1,054,156	958,531	552,444,259
2018	5,580,539	318,815,857	2,850,627	417,555,491	282,261	674,439	97,555	1,054,255	883,623	561,180,558
2019	5,473,079	307,205,169	2,720,606	402,587,390	282,488	674,508	94,982	1,051,978	819,395	545,046,692
2020	5,331,880	296,942,980	2,636,977	389,308,046	282,621	674,548	83,076	1,040,245	798,979	531,330,437
2021	5,157,232	287,115,088	2,555,327	376,611,650	290,542	676,952	84,212	1,051,706	794,989	519,914,403
2022	5,217,981	286,562,170	2,571,271	376,571,581	275,365	672,346	79,065	1,026,776	794,940	517,538,206
2023	5,132,527	279,195,067	2,516,275	367,684,305	288,390	676,299	82,292	1,046,981	793,675	510,467,312
2024	5,134,471	279,882,729	2,534,854	368,459,838	280,820	674,001	80,415	1,035,236	793,556	510,084,157
2025	5,033,524	258,628,760	2,355,863	342,068,821	258,871	667,340	74,974	1,001,185	792,024	477,231,854
2026	5,037,800	253,034,103	2,299,559	334,497,339	240,441	661,747	70,406	972,594	791,726	464,782,265
2027	4,945,384	239,533,152	2,199,131	318,315,351	235,740	660,320	69,238	965,298	790,707	446,796,266
2028	4,970,175	249,490,460	2,291,221	329,196,049	229,892	658,545	67,788	956,225	789,926	456,952,524
2029	4,948,711	236,512,386	2,157,692	314,293,638	229,892	658,545	67,786	956,223	788,121	441,027,225
2030	4,917,773	233,146,353	2,119,450	309,878,361	229,892	658,545	67,785	956,222	786,603	436,102,688
2031	4,950,270	240,125,397	2,192,937	319,103,530	229,892	658,545	67,783	956,220	784,169	446,929,174
2032	5,008,282	244,909,520	2,229,922	324,594,340	229,892	658,545	67,781	956,218	784,458	452,241,022
2033	4,834,236	224,362,030	2,034,796	299,170,810	229,892	658,545	67,781	956,218	783,044	424,990,900
2034	4,890,207	232,582,946	2,118,653	309,370,792	229,892	658,545	67,780	956,217	779,735	436,103,256
2035	5,004,519	240,021,975	2,165,239	318,858,686	229,892	658,545	67,779	956,216	775,688	445,847,159
Total	227,342,677	15,862,041,895	131,344,672	20,432,052,605	11,842,367	24,080,086	3,938,957	39,861,410	53,993,766	27,423,929,981

Table B-24

Equivalent Unit Charge for Water Supply for Each Contractor (a

(Dollars per Acre-Foot)

Project Service Area and Water Supply Contractor	Transportation Charge					Delta Water Charge (6)	Water System Revenue Bond Surcharge (7)	Total Equivalent Unit Charge (8)
	Capital Cost Component (1)	Minimum OMP&R Component (2)	Off-Aqueduct Component (3)	Variable OMP&R Component (4)	Total (5)			
Feather River Area								
City of Yuba City	0.00	0.00	0.00	0.00	0.00	32.75	4.60	37.35
County of Butte	0.00	0.00	0.00	0.00	0.00	14.80	2.08	16.88
Plumas County Flood Control and Water Conservation District	17.60	2.39	0.00	0.00	19.99	21.82	7.82	49.63
Feather River Area	1.22	0.17	0.00	0.00	1.39	18.62	2.94	22.95
North Bay Area								
Napa County Flood Control and Water Conservation District	113.04	37.86	4.86	8.70	164.46	16.38	32.85	213.69
Solano County Water Agency	71.89	26.83	4.04	4.78	107.54	20.67	22.33	150.54
North Bay Area	86.50	30.75	4.33	6.17	127.75	19.15	26.07	172.97
South Bay Area								
Alameda County Flood Control and Water Conservation District, Zone 7	18.17	30.53	9.50	12.36	70.56	22.54	8.07	101.17
Alameda County Water District	20.40	26.34	7.72	10.72	65.18	20.38	8.37	93.93
Santa Clara Valley Water District	18.63	19.38	6.88	9.11	54.00	15.05	7.15	76.20
South Bay Area	18.87	22.35	7.43	9.90	58.55	17.16	7.51	83.22
San Joaquin Valley Area								
County of Kings	4.58	4.13	3.85	4.43	16.99	19.06	3.91	39.96
Dudley Ridge Water District	5.24	4.66	3.27	3.91	17.08	15.56	3.60	36.24
Empire West Side Irrigation District	2.02	3.87	2.52	3.66	12.07	16.85	2.91	31.83
Kern County Water Agency	8.87	9.29	5.05	5.42	28.63	18.58	5.00	52.21
Oak Flat Water District	1.95	2.19	2.03	2.55	8.72	15.24	2.67	26.63
Tulare Lake Basin Water Storage District	5.34	4.78	3.20	4.20	17.52	16.63	3.78	37.93
San Joaquin Valley Area	8.24	8.50	4.74	5.19	26.67	18.19	4.78	49.64
Central Coastal Area								
San Luis Obispo County Flood Control and Water Conservation District	339.10	82.38	16.15	49.06	486.69	41.14	97.42	625.25
Santa Barbara County Flood Control and Water Conservation District	360.82	81.06	22.77	48.66	513.31	40.02	103.13	656.46
Central Coastal Area	353.34	81.51	20.49	48.80	504.14	40.40	101.17	645.71
Southern California Area								
Antelope Valley-East Kern Water Agency	39.05	35.36	27.50	44.23	146.14	28.13	14.50	188.77
Castaic Lake Water Agency	61.87	37.14	19.60	17.55	136.16	24.41	20.15	180.72
Coachella Valley Water District	38.32	33.90	53.48	21.00	146.70	17.80	12.85	177.35
Crestline-Lake Arrowhead Water Agency	90.82	71.85	25.38	52.83	240.88	34.15	29.34	304.37
Desert Water Agency	41.13	36.39	51.36	24.08	152.96	18.89	13.77	185.62
Littlerock Creek Irrigation District	46.72	41.43	32.15	47.87	168.17	32.58	17.20	217.95
Mojave Water Agency	114.71	95.86	26.04	67.85	304.46	54.98	38.72	398.16
Palmdale Water District	51.21	45.84	39.78	51.70	188.53	38.67	19.27	246.47
San Bernardino Valley Municipal Water District	125.60	99.82	27.42	31.17	284.01	42.64	39.93	366.58
San Gabriel Valley Municipal Water District	88.93	72.51	36.52	24.61	222.57	32.10	28.54	283.21
San Gorgonio Pass Water Agency	215.01	174.40	22.57	39.94	451.92	49.92	65.12	566.96
The Metropolitan Water District of Southern California	76.00	56.80	35.20	19.11	187.11	31.26	24.93	243.30
Ventura County Flood Control District	109.92	82.24	26.69	37.63	256.48	46.41	36.22	339.11
Southern California Area	74.62	56.49	34.45	22.15	187.71	31.18	24.54	243.43
All Areas	43.99	32.96	19.05	13.86	109.86	24.44	15.32	149.62

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, 4.615 percent per annum.

Table B-25

Equivalent Unit Transportation Costs of Water Delivered from or through Each Aqueduct Reach (a

(Dollars per Acre-Foot)

Aqueduct Reach	Unit Costs of Reach (b						Cumulative Unit Costs from the Delta					
	Capital Costs (1)	Water System Revenue Bond Surcharge (c (2)	Minimum OMP&R (3)	Aqueduct Costs (4)	Variable OMP&R (5)	Total (6)	Capital Costs (7)	Water System Revenue Bond Surcharge (c (8)	Minimum OMP&R (9)	Aqueduct Costs (10)	Variable OMP&R (11)	Total (12)
North Bay Aqueduct												
1	38.91	10.52	12.31	1.32	1.96	65.02	38.91	10.52	12.31	1.32	1.96	65.02
2	41.41	11.19	5.38	0.00	0.00	57.98	80.32	21.71	17.69	1.32	1.96	123.00
3A	7.38	1.99	10.70	2.46	3.17	25.70	87.70	23.70	28.39	3.78	5.13	148.70
3B	47.48	12.83	24.19	3.17	7.04	94.71	127.80	34.54	41.88	4.49	9.00	217.71
South Bay Aqueduct												
1	6.80	1.84	14.43	5.42	7.34	35.83	8.70	2.35	17.27	7.19	10.77	46.28
2	0.64	0.17	1.63	0.00	0.00	2.44	9.34	2.52	18.90	7.19	10.77	48.72
4	2.14	0.58	2.78	0.00	0.00	5.50	11.48	3.10	21.68	7.19	10.77	54.22
5	4.49	1.21	2.18	0.00	0.00	7.88	15.97	4.31	23.86	7.19	10.77	62.10
6	0.26	0.07	0.23	0.00	0.00	0.56	16.23	4.38	24.09	7.19	10.77	62.66
7	1.99	0.54	0.42	0.00	0.00	2.95	18.22	4.92	24.51	7.19	10.77	65.61
8	2.70	0.73	0.70	0.00	0.00	4.13	20.92	5.65	25.21	7.19	10.77	69.74
9	5.58	1.51	2.62	0.00	0.00	9.71	26.50	7.16	27.83	7.19	10.77	79.45
California Aqueduct												
1	1.90	0.51	2.84	1.77	3.43	10.45	1.90	0.51	2.84	1.77	3.43	10.45
2A	1.21	0.33	0.56	0.00	0.00	2.10	3.11	0.84	3.40	1.77	3.43	12.55
2B	0.62	0.17	0.28	0.00	0.00	1.07	3.73	1.01	3.68	1.77	3.43	13.62
3	0.54	0.15	0.21	0.00	0.00	0.90	4.27	1.16	3.89	1.77	3.43	14.52
4	0.86	0.23	1.41	0.82	1.55	4.87	5.13	1.39	5.30	2.59	4.98	19.39
5	0.66	0.18	0.28	0.00	0.00	1.12	5.79	1.57	5.58	2.59	4.98	20.51
6	0.17	0.05	0.14	0.00	0.00	0.36	5.96	1.62	5.72	2.59	4.98	20.87
7	0.99	0.27	0.34	0.00	0.00	1.60	6.95	1.89	6.06	2.59	4.98	22.47
8C	0.02	0.01	0.06	0.00	0.00	0.09	6.97	1.90	6.12	2.59	4.98	22.56
8D	0.38	0.10	0.27	0.00	0.00	0.75	7.35	2.00	6.39	2.59	4.98	23.31
9	0.32	0.09	0.25	0.00	0.00	0.66	7.67	2.09	6.64	2.59	4.98	23.97
10A	0.34	0.09	0.33	0.00	0.00	0.76	8.01	2.18	6.97	2.59	4.98	24.73
11B	0.50	0.14	0.21	0.00	0.00	0.85	8.51	2.32	7.18	2.59	4.98	25.58
12D	0.47	0.13	0.19	0.00	0.00	0.79	8.98	2.45	7.37	2.59	4.98	26.37
12E	0.33	0.09	0.32	0.00	0.00	0.74	9.31	2.54	7.69	2.59	4.98	27.11
13B	0.71	0.19	0.37	0.00	0.00	1.27	10.02	2.73	8.06	2.59	4.98	28.38
14A	2.74	0.74	2.85	1.40	2.92	10.65	12.76	3.47	10.91	3.99	7.90	39.03
14B	0.43	0.12	0.35	0.00	0.00	0.90	13.19	3.59	11.26	3.99	7.90	39.93
14C	0.36	0.10	0.26	0.00	0.00	0.72	13.55	3.69	11.52	3.99	7.90	40.65
15A	2.03	0.55	2.97	1.69	3.17	10.41	15.58	4.24	14.49	5.68	11.07	51.06
16A	3.36	0.91	4.60	3.65	7.40	19.92	18.94	5.15	19.09	9.33	18.47	70.98
17E	11.34	3.06	12.92	12.76	27.32	67.40	30.28	8.21	32.01	22.09	45.79	138.38
17F	2.94	0.79	0.16	0.00	0.00	3.89	33.22	9.00	32.17	22.09	45.79	142.27
18A	2.64	0.71	1.55	0.00	-2.87	2.03	35.86	9.71	33.72	22.09	42.92	144.30
19	1.95	0.53	0.94	0.00	0.00	3.42	37.81	10.24	34.66	22.09	42.92	147.72
19C	2.12	0.57	0.00	0.00	0.00	2.69	39.93	10.81	34.66	22.09	42.92	150.41
20A	1.55	0.42	1.55	0.00	0.00	3.52	41.48	11.23	36.21	22.09	42.92	153.93
20B	1.88	0.51	1.02	0.00	0.00	3.41	43.36	11.74	37.23	22.09	42.92	157.34
21	0.95	0.26	0.71	0.00	0.00	1.92	44.31	12.00	37.94	22.09	42.92	159.26
22A	0.99	0.27	0.37	0.00	0.00	1.63	45.30	12.27	38.31	22.09	42.92	160.89
22B	9.72	2.63	10.00	4.12	9.01	35.48	55.02	14.90	48.31	26.21	51.93	196.37
23	2.67	0.72	0.69	0.00	-3.66	0.42	57.69	15.62	49.00	26.21	48.27	196.79
24	5.18	1.40	1.94	0.00	0.00	8.52	62.87	17.02	50.94	26.21	48.27	205.31
25	3.78	1.02	0.11	0.00	0.00	4.91	66.65	18.04	51.05	26.21	48.27	210.22
26A	4.13	1.12	6.48	0.00	-24.98	(13.25)	70.78	19.16	57.53	26.21	23.29	196.97
28G	7.69	2.08	2.45	0.00	0.00	12.22	78.47	21.24	59.98	26.21	23.29	209.19
28H	7.40	2.00	2.57	0.00	0.00	11.97	85.87	23.24	62.55	26.21	23.29	221.16
28J	83.01	22.44	35.73	0.00	0.00	141.18	168.88	45.68	98.28	26.21	23.29	362.34
West Branch												
29A	3.85	1.04	7.42	1.57	3.21	17.09	37.07	10.04	39.59	23.66	49.00	159.36
29F	2.81	0.76	0.89	0.00	0.00	4.46	39.88	10.80	40.48	23.66	49.00	163.82
29G	9.33	2.52	4.22	0.00	-11.55	4.52	49.21	13.32	44.70	23.66	37.45	168.34
29H	5.81	1.57	4.00	0.00	0.00	11.38	55.02	14.89	48.70	23.66	37.45	179.72
29J	9.74	2.63	1.15	0.00	-21.60	(8.08)	64.76	17.52	49.85	23.66	15.85	171.64
30	15.63	4.22	3.59	0.00	0.00	23.44	80.39	21.74	53.44	23.66	15.85	195.08
Coastal Branch												
31A	7.07	1.91	16.94	1.74	2.76	30.42	14.42	3.91	23.33	4.33	7.74	53.73
33A	264.18	71.40	31.95	14.76	36.08	418.37	278.60	75.31	55.28	19.09	43.82	472.10
34	188.75	51.01	0.89	0.00	0.00	240.65	467.35	126.32	56.17	19.09	43.82	712.75
35	0.00	0.00	0.00	0.00	0.00	0.00	467.35	126.32	56.17	19.09	43.82	712.75

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 canal-side. 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 4.615 percent per annum.

c) The Water System Revenue Bond Surcharge equivalent unit rate is calculated by dividing the WSRB surcharge for 2000 (from 132-99, Table B-22) by the total Transportation Capital (132-99, B-15) and the Capital component of the Delta Water Charge (132-99, B-4 * 11.77671248). This rate is multiplied by the equivalent rate for the Transportation Capital cost (column 1).

Table B-26

Captial Costs of Each Aqueduct Reach to Be Reimbursed through the Capital Cost Component of the East Branch Enlargement Transportation Charge

(Dollars)

Calendar Year	California Aqueduct							
	Mojave Division							
	Reach 18A (1)	Reach 19 (2)	Reach 20A (3)	Reach 20B (4)	Reach 21 (5)	Reach 22A (6)	Reach 22B (7)	Reach 23B (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	435,000	75,000	544,000	859,000	703,000	970,000	146,000
1986	784,000	4,477,000	3,144,000	2,234,000	1,569,000	1,203,000	1,808,000	34,000
1987	11,000	951,000	1,076,000	666,000	399,000	47,000	16,421,000	43,000
1988	1,000	125,000	1,681,000	1,730,000	2,024,000	40,000	13,326,000	70,000
1989	0	206,000	2,089,000	2,174,000	2,510,000	61,000	11,242,000	229,000
1990	1,000	577,000	903,000	735,000	928,000	194,000	20,131,000	887,000
1991	1,000	280,000	413,000	333,000	422,000	93,000	20,702,000	1,215,000
1992	0	40,000	41,000	39,000	35,000	13,000	9,599,000	3,719,000
1993	0	19,000	16,000	19,000	12,000	6,000	2,319,000	19,654,000
1994	0	2,000	3,000	2,000	4,000	3,000	803,000	3,173,000
1995	0	0	0	0	0	0	223,000	1,465,000
1996	0	0	0	0	0	0	6,014,000	478,000
1997	0	0	0	0	0	0	391,000	1,327,000
1998	0	0	0	0	0	0	13,000	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	5,841,000	7,112,000	9,441,000	8,476,000	8,762,000	2,363,000	104,758,000	38,830,000

Table B-26

Captial Costs of Each Aqueduct Reach to Be Reimbursed through the Capital Cost Component of the East Branch Enlargement Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)							Grand Total (16)
	Mojave Division (continued)			Santa Ana Division				
	Reach 23C (9)	Reach 24 (10)	Total (11)	Reach 25 (12)	Reach 26A (13)	Reach 26B (14)	Total (15)	
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	0	0	2,911,000
1985	0	0	3,825,000	0	528,000	89,000	617,000	4,442,000
1986	25,000	0	15,278,000	0	1,926,000	154,000	2,080,000	17,358,000
1987	178,000	0	19,792,000	0	3,699,000	437,000	4,136,000	23,928,000
1988	632,000	0	19,629,000	0	5,667,000	3,329,000	8,996,000	28,625,000
1989	1,130,000	0	19,641,000	0	40,879,000	1,650,000	42,529,000	62,170,000
1990	2,066,000	0	26,422,000	0	29,853,000	1,650,000	31,503,000	57,925,000
1991	4,980,000	0	28,439,000	0	26,027,000	999,000	27,026,000	55,465,000
1992	11,920,000	0	25,406,000	0	15,317,000	299,000	15,616,000	41,022,000
1993	16,303,000	0	38,348,000	0	4,878,000	0	4,878,000	43,226,000
1994	7,081,000	0	11,071,000	0	3,151,000	0	3,151,000	14,222,000
1995	5,350,000	0	7,038,000	0	2,137,000	0	2,137,000	9,175,000
1996	1,706,000	0	8,198,000	0	9,181,000	0	9,181,000	17,379,000
1997	1,905,000	0	3,623,000	0	175,000	0	175,000	3,798,000
1998	28,000	0	41,000	0	0	0	0	41,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	53,304,000	0	238,887,000	0	143,418,000	8,607,000	152,025,000	390,912,000

Table B-27

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of the East Branch Enlargement Transportation Charge (a

(Dollars)

Calendar Year	California Aqueduct							
	Mojave Division							
	Reach 18A (1)	Reach 19 (2)	Reach 20A (3)	Reach 20B (4)	Reach 21 (5)	Reach 22A (6)	Reach 22B (7)	Reach 23B (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	0	0
1993	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	1,216,000	0
1996	0	0	0	0	0	0	1,168,800	0
1997	0	0	0	0	0	0	1,061,700	0
1998	0	0	0	0	0	0	1,078,600	0
1999	0	0	0	0	0	0	1,129,931	0
2000	0	0	0	0	0	0	1,199,985	0
2001	0	0	0	0	0	0	1,199,985	0
2002	0	0	0	0	0	0	1,199,985	0
2003	0	0	0	0	0	0	1,199,985	0
2004	0	0	0	0	0	0	1,199,985	0
2005	0	0	0	0	0	0	1,199,985	0
2006	0	0	0	0	0	0	1,199,985	0
2007	0	0	0	0	0	0	1,199,985	0
2008	0	0	0	0	0	0	1,199,985	0
2009	0	0	0	0	0	0	1,199,985	0
2010	0	0	0	0	0	0	1,199,985	0
2011	0	0	0	0	0	0	1,199,985	0
2012	0	0	0	0	0	0	1,199,985	0
2013	0	0	0	0	0	0	1,199,985	0
2014	0	0	0	0	0	0	1,199,985	0
2015	0	0	0	0	0	0	1,199,985	0
2016	0	0	0	0	0	0	1,199,985	0
2017	0	0	0	0	0	0	1,199,985	0
2018	0	0	0	0	0	0	1,199,985	0
2019	0	0	0	0	0	0	1,199,985	0
2020	0	0	0	0	0	0	1,199,985	0
2021	0	0	0	0	0	0	1,199,985	0
2022	0	0	0	0	0	0	1,199,985	0
2023	0	0	0	0	0	0	1,199,985	0
2024	0	0	0	0	0	0	1,199,985	0
2025	0	0	0	0	0	0	1,199,985	0
2026	0	0	0	0	0	0	1,199,985	0
2027	0	0	0	0	0	0	1,199,985	0
2028	0	0	0	0	0	0	1,199,985	0
2029	0	0	0	0	0	0	1,199,985	0
2030	0	0	0	0	0	0	1,199,985	0
2031	0	0	0	0	0	0	1,199,985	0
2032	0	0	0	0	0	0	1,199,985	0
2033	0	0	0	0	0	0	1,199,985	0
2034	0	0	0	0	0	0	1,199,985	0
2035	0	0	0	0	0	0	1,199,985	0
Total	0	0	0	0	0	0	48,854,491	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 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 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 the East Branch Enlargement Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)							Total (16)
	Mojave Division (continued)			Santa Ana Division				
	Reach 23C (9)	Reach 24 (10)	Subtotal (11)	Reach 25 (12)	Reach 26A (b (13)	Reach 26B (14)	Subtotal (15)	
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	0	0
1993	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0
1995	370,500	0	1,586,500	0	1,218,500	0	1,218,500	2,805,000
1996	554,500	0	1,723,300	0	1,435,900	0	1,435,900	3,159,200
1997	575,200	0	1,636,900	0	1,423,700	0	1,423,700	3,060,600
1998	898,900	0	1,977,500	0	1,479,800	0	1,479,800	3,457,300
1999	941,490	0	2,071,421	0	1,531,714	0	1,531,714	3,603,135
2000	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2001	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2002	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2003	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2004	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2005	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2006	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2007	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2008	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2009	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2010	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2011	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2012	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2013	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2014	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2015	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2016	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2017	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2018	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2019	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2020	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2021	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2022	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2023	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2024	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2025	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2026	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2027	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2028	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2029	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2030	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2031	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2032	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2033	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2034	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
2035	999,969	0	2,199,954	0	1,625,407	0	1,625,407	3,825,361
Total	39,339,474	0	88,193,965	0	65,604,266	0	65,604,266	153,798,231

b) Units 3 and 4 at Devil Canyon Powerplant were operational in 1993. These minimum OMP&R costs for Reach 26A will be revised to reflect operational date of those units.

Table B-28

Capital Costs of East Branch Enlargement Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	Southern California Area							Total
	Antelope Valley-East Kern Water Agency (1)	*Coachella Valley Water District (2)*	*Desert Water Agency (3)*	*Mojave Water Agency (4)*	*Palmdale Water District (5)*	*San Bernardino Valley Municipal Water District (6)*	*Metropolitan Water District of Southern California (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	2,218,248	2,911,000
1985	49,675	447,266	65,773	347,262	4,514	21,614	3,505,896	4,442,000
1986	185,353	1,757,633	236,324	1,363,586	41,900	78,842	13,694,362	17,358,000
1987	49,735	2,455,279	378,535	1,774,447	10,615	151,421	19,107,968	23,928,000
1988	124,534	2,689,959	500,466	1,712,431	13,783	231,982	23,351,845	28,625,000
1989	155,446	7,118,094	2,423,000	1,671,088	17,419	1,673,409	49,111,544	62,170,000
1990	62,786	6,459,229	1,943,918	2,234,452	8,680	1,222,053	45,993,882	57,925,000
1991	28,686	6,265,822	1,875,066	2,168,712	4,024	1,065,433	44,057,257	55,465,000
1992	2,911	4,826,764	1,610,921	1,359,335	471	627,012	32,594,586	41,022,000
1993	1,205	5,094,237	1,828,410	2,722,156	212	199,684	33,380,095	43,225,999
1994	273	1,726,376	631,816	478,543	27	128,988	11,255,977	14,222,000
1995	0	1,130,963	423,243	206,978	0	87,480	7,326,337	9,175,001
1996	0	2,025,987	645,296	606,205	0	375,830	13,725,682	17,379,000
1997	0	449,702	154,253	204,617	0	7,164	2,982,264	3,798,000
1998	0	4,859	1,406	1,179	0	0	33,556	41,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	660,604	43,735,628	13,025,499	18,184,774	121,366	5,870,912	309,313,217	390,912,000

Table B-29

Capital Cost Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area							Total
	Antelope Valley-East Kern Water Agency (1)	Coachella Valley Water District (2)	Desert Water Agency (3)	Mojave Water Agency (4)	Palmdale Water District (5)	San Bernardino Valley Municipal Water District (a (6)	Metropolitan Water District of Southern California (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	22,832	1,511,616	450,195	628,513	4,195	0	10,690,663	13,308,014
1989	23,969	1,586,905	472,618	659,817	4,404	0	11,223,131	13,970,844
1990	23,983	1,587,805	472,885	660,191	4,406	0	11,229,495	13,978,765
1991	23,984	1,587,826	472,892	660,200	4,406	0	11,229,647	13,978,955
1992	50,500	3,343,402	995,744	1,390,148	9,279	0	23,645,677	29,434,750
1993	52,471	3,473,882	1,034,604	1,444,400	9,640	0	24,568,478	30,583,475
1994	52,208	3,456,437	1,029,408	1,437,147	9,592	0	24,445,097	30,429,889
1995	54,639	3,617,368	1,077,337	1,504,060	10,038	0	25,583,256	31,846,698
1996	58,198	3,853,011	1,147,516	1,602,038	10,692	0	27,249,802	33,921,257
1997	62,953	4,167,855	1,241,285	1,732,946	11,566	0	29,476,485	36,693,090
1998	63,835	4,226,251	1,258,676	1,757,227	11,728	0	29,889,490	37,207,207
1999	66,451	4,399,431	1,310,254	1,829,233	12,209	0	31,114,270	38,731,848
2000	72,115	4,774,433	1,421,938	1,985,154	13,249	0	33,766,410	42,033,299
2001	72,086	4,772,473	1,421,354	1,984,339	13,244	0	33,752,548	42,016,044
2002	71,623	4,741,809	1,412,222	1,971,590	13,159	0	33,535,682	41,746,085
2003	71,545	4,736,669	1,410,691	1,969,453	13,145	0	33,499,331	41,700,834
2004	69,085	4,573,833	1,362,195	1,901,748	12,693	0	32,347,702	40,267,256
2005	69,047	4,571,302	1,361,441	1,900,695	12,686	0	32,329,799	40,244,970
2006	70,103	4,641,198	1,382,258	1,929,757	12,879	0	32,824,133	40,860,328
2007	70,157	4,644,817	1,383,336	1,931,261	12,890	0	32,849,724	40,892,185
2008	68,593	4,541,215	1,352,481	1,888,186	12,602	0	32,117,013	39,980,090
2009	68,686	4,547,393	1,354,320	1,890,754	12,620	0	32,160,705	40,034,478
2010	68,809	4,555,466	1,356,725	1,894,111	12,641	0	32,217,811	40,105,563
2011	69,153	4,578,286	1,363,521	1,903,599	12,705	0	32,379,200	40,306,464
2012	69,256	4,585,151	1,365,566	1,906,454	12,725	0	32,427,752	40,366,904
2013	69,290	4,587,379	1,366,230	1,907,380	12,730	0	32,443,509	40,386,518
2014	68,326	4,523,630	1,347,244	1,880,874	12,553	0	31,992,655	39,825,282
2015	69,129	4,576,731	1,363,059	1,902,953	12,701	0	32,368,200	40,292,773
2016	69,200	4,581,359	1,364,436	1,904,877	12,714	0	32,400,923	40,333,509
2017	69,691	4,613,927	1,374,136	1,918,419	12,804	0	32,631,260	40,620,237
2018	69,801	4,621,236	1,376,313	1,921,458	12,825	0	32,682,956	40,684,589
2019	69,723	4,616,024	1,374,760	1,919,290	12,810	0	32,646,089	40,638,696
2020	69,858	4,624,959	1,377,421	1,923,005	12,835	0	32,709,283	40,717,361
2021	70,966	4,698,319	1,399,269	1,953,507	13,038	0	33,228,102	41,363,201
2022	71,301	4,720,541	1,405,888	1,962,747	13,099	0	33,385,273	41,558,849
2023	59,300	3,925,936	1,169,236	1,632,359	10,895	0	27,765,551	34,563,277
2024	59,561	3,943,233	1,174,386	1,639,551	10,943	0	27,887,880	34,715,554
2025	48,386	3,203,443	954,060	1,331,955	8,889	0	22,655,835	28,202,568
2026	24,346	1,611,831	480,041	670,180	4,473	0	11,399,418	14,190,289
2027	18,881	1,250,081	372,304	519,770	3,470	0	8,841,000	11,005,506
2028	16,241	1,075,257	320,237	447,079	2,984	0	7,604,581	9,466,379
2029	16,317	1,080,309	321,741	449,180	2,998	0	7,640,304	9,510,849
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	2,406,598	159,330,029	47,452,223	66,247,605	442,154	0	1,126,836,120	1,402,714,729

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 1999, $6,347,938 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

(Dollars)

Calendar Year	Southern California Area							Total
	Antelope Valley-East Kern Water Agency (1)	*Coachella Valley Water District (2)*	*Desert Water Agency (3)*	*Mojave Water Agency (4)*	*Palmdale Water District (5)*	*San Bernardino Valley Municipal Water District (6)*	*Metropolitan Water District of Southern California (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	0	0
1993	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0
1995	0	322,201	93,362	110,251	0	49,880	2,229,306	2,805,000
1996	0	368,045	113,173	105,971	0	58,780	2,513,231	3,159,200
1997	0	358,359	112,543	96,261	0	58,280	2,435,157	3,060,600
1998	0	408,144	130,662	97,793	0	60,577	2,760,125	3,457,301
1999	0	425,222	135,873	102,447	0	62,702	2,876,890	3,603,134
2000	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2001	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2002	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2003	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2004	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2005	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2006	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2007	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2008	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2009	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2010	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2011	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2012	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2013	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2014	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2015	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2016	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2017	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2018	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2019	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2020	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2021	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2022	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2023	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2024	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2025	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2026	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2027	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2028	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2029	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2030	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2031	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2032	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2033	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2034	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
2035	0	451,440	144,234	108,799	0	66,537	3,054,352	3,825,362
Total	0	18,133,811	5,778,037	4,429,487	0	2,685,551	122,771,381	153,798,267

Table B-31

Total East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area							Total
	Antelope Valley-East Kern Water Agency (1)	*Coachella Valley Water District (2)*	*Desert Water Agency (3)*	*Mojave Water Agency (4)*	*Palmdale Water District (5)*	*San Bernardino Valley Municipal WaterDistrict (6)*	*Metropolitan Water District of Southern California (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	22,832	1,511,616	450,195	628,513	4,195	0	10,690,663	13,308,014
1989	23,969	1,586,905	472,618	659,817	4,404	0	11,223,131	13,970,844
1990	23,983	1,587,805	472,885	660,191	4,406	0	11,229,495	13,978,765
1991	23,984	1,587,826	472,892	660,200	4,406	0	11,229,647	13,978,955
1992	50,500	3,343,402	995,744	1,390,148	9,279	0	23,645,677	29,434,750
1993	52,471	3,473,882	1,034,604	1,444,400	9,640	0	24,568,478	30,583,475
1994	52,208	3,456,437	1,029,408	1,437,147	9,592	0	24,445,097	30,429,889
1995	54,639	3,939,569	1,170,699	1,614,311	10,038	49,880	27,812,562	34,651,698
1996	58,198	4,221,056	1,260,689	1,708,009	10,692	58,780	29,763,033	37,080,457
1997	62,953	4,526,214	1,353,828	1,829,207	11,566	58,280	31,911,642	39,753,690
1998	63,835	4,634,395	1,389,338	1,855,020	11,728	60,577	32,649,614	40,664,507
1999	66,451	4,824,653	1,446,127	1,931,680	12,209	62,702	33,991,161	42,334,983
2000	72,115	5,225,873	1,566,172	2,093,953	13,249	66,537	36,820,761	45,858,660
2001	72,086	5,223,913	1,565,588	2,093,138	13,244	66,537	36,806,899	45,841,405
2002	71,623	5,193,249	1,556,456	2,080,389	13,159	66,537	36,590,033	45,571,446
2003	71,545	5,188,109	1,554,925	2,078,252	13,145	66,537	36,553,682	45,526,195
2004	69,085	5,025,273	1,506,429	2,010,547	12,693	66,537	35,402,053	44,092,617
2005	69,047	5,022,742	1,505,675	2,009,494	12,686	66,537	35,384,150	44,070,331
2006	70,103	5,092,638	1,526,492	2,038,556	12,879	66,537	35,878,484	44,685,689
2007	70,157	5,096,257	1,527,570	2,040,060	12,890	66,537	35,904,075	44,717,546
2008	68,593	4,992,655	1,496,715	1,996,985	12,602	66,537	35,171,364	43,805,451
2009	68,686	4,998,833	1,498,554	1,999,553	12,620	66,537	35,215,056	43,859,839
2010	68,809	5,006,906	1,500,959	2,002,910	12,641	66,537	35,272,162	43,930,924
2011	69,153	5,029,726	1,507,755	2,012,398	12,705	66,537	35,433,551	44,131,825
2012	69,256	5,036,591	1,509,800	2,015,253	12,725	66,537	35,482,103	44,192,265
2013	69,290	5,038,819	1,510,464	2,016,179	12,730	66,537	35,497,860	44,211,879
2014	68,326	4,975,070	1,491,478	1,989,673	12,553	66,537	35,047,006	43,650,643
2015	69,129	5,028,171	1,507,293	2,011,752	12,701	66,537	35,422,551	44,118,134
2016	69,200	5,032,799	1,508,670	2,013,676	12,714	66,537	35,455,274	44,158,870
2017	69,691	5,065,367	1,518,370	2,027,218	12,804	66,537	35,685,611	44,445,598
2018	69,801	5,072,676	1,520,547	2,030,257	12,825	66,537	35,737,307	44,509,950
2019	69,723	5,067,464	1,518,994	2,028,089	12,810	66,537	35,700,440	44,464,057
2020	69,858	5,076,399	1,521,655	2,031,804	12,835	66,537	35,763,634	44,542,722
2021	70,966	5,149,759	1,543,503	2,062,306	13,038	66,537	36,282,453	45,188,562
2022	71,301	5,171,981	1,550,122	2,071,546	13,099	66,537	36,439,624	45,384,210
2023	59,300	4,377,376	1,313,470	1,741,158	10,895	66,537	30,819,902	38,388,638
2024	59,561	4,394,673	1,318,620	1,748,350	10,943	66,537	30,942,231	38,540,915
2025	48,386	3,654,883	1,098,294	1,440,754	8,889	66,537	25,710,186	32,027,929
2026	24,346	2,063,271	624,275	778,979	4,473	66,537	14,453,769	18,015,650
2027	18,881	1,701,521	516,538	628,569	3,470	66,537	11,895,351	14,830,867
2028	16,241	1,526,697	464,471	555,878	2,984	66,537	10,658,932	13,291,740
2029	16,317	1,531,749	465,975	557,979	2,998	66,537	10,694,655	13,336,210
2030	0	451,440	144,234	108,799	0	66,537	3,054,351	3,825,361
2031	0	451,440	144,234	108,799	0	66,537	3,054,351	3,825,361
2032	0	451,440	144,234	108,799	0	66,537	3,054,351	3,825,361
2033	0	451,440	144,234	108,799	0	66,537	3,054,351	3,825,361
2034	0	451,440	144,234	108,799	0	66,537	3,054,351	3,825,361
2035	0	451,440	144,234	108,799	0	66,537	3,054,351	3,825,361
Total	2,406,598	177,463,840	53,230,260	70,677,092	442,154	2,685,551	1,249,607,465	1,556,512,960