BULLETIN 132-00
DECEMBER 2001

MANAGEMENT OF THE CALIFORNIA STATE WATER PROJECT

GRAY DAVIS
Governor, State of California

MARY D. NICHOLS
Secretary for Resources, The Resources Agency

THOMAS M. HANNIGAN
Director, Department of Water Resources

❖ ❖ ❖

Publishing Information

Cover photo shows the water control gates at Bethany Reservoir.
Cover design was provided by Xiaojun Li, Graphic Designer, Graphic Services.
Photos were provided by the Office of Water Education Photography Unit.
Copies of this document are available for $15.00 from:
Publication Sales
Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236-0001
(916) 653-1097

Printed on recycled paper

Management of the California State Water Project

Covers Activities during Calendar Year 1999

❖ ❖ ❖

Gray Davis, Governor
State of California

Mary D. Nichols, Secretary for Resources
The Resources Agency

Thomas M. Hannigan, Director
Department of Water Resources

❖ ❖ ❖

Foreword

Bulletin 132-00, *Management of the California State Water Project,* continues the Bulletin 132 annual series begun in 1963. Bulletin 132-00 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 2001. A preliminary 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, 1999, to December 31, 1999.

Bulletin 132-00 also discusses water supply and delivery; the start of construction of the East Branch Extension; Delta resources and environmental issues, including the CALFED Bay-Delta Program; Oroville facilities relicensing; financial analysis of the SWP; and the update of business systems in the Department.

Thomas M. Hannigan
Director

Contents

❖ ❖ ❖

❖ ❖ ❖

Sidebars

❖ ❖ ❖

❖ ❖ ❖

Tables

❖ ❖ ❖

❖ ❖ ❖

Figures

❖ ❖ ❖

❖ ❖ ❖

STATE OF CALIFORNIA
Gray Davis, Governor

THE RESOURCES AGENCY
Mary D. Nichols, Secretary for Resources

DEPARTMENT OF WATER RESOURCES
Thomas M. Hannigan, Director

Raymond D. Hart
Deputy Director

Steve Macaulay
Chief Deputy Director

Jonas Minton
Deputy Director

L. Lucinda Chipponeri
Deputy Director for Legislation

Peggy Bernardy
Chief Counsel

This report was prepared under the direction of

STATE WATER PROJECT ANALYSIS OFFICE

Dan Flory, Chief
George T. Qualley, Principal Engineer
Curtis Spencer, Principal Engineer

By

Bulletin 132 Section
Kay Mogavero, Chief
Maureen Reed, Research Writer
Cynthia Shepard, Research Writer
Therese J. Tynan, Research Writer

With major contributions provided under the direction of

Dick Buchan, Facility Integrity
Teresa Geimer, Chief, Transfers and Special Projects Branch
Len Marino, Chief, Oroville Facilities Relicensing Branch
Nancy Quan, Chief, Water Contracts Branch
Gurdip Rehal, Chief, Project Power Contracts Branch
Dave Samson, Project Coordination
Pedro Villalobos, Chief, Project Cost Branch
Michael Werner, Chief, Project Power Planning Branch

Teodoro Alvarez, Senior Engineer
Mark Andersen, Senior Engineer
Lori Brown, Senior Engineer
Miguel De Anda, Senior Engineer
Chi Thuy Doan, Senior Engineer
John Fielden, Senior Engineer
Dan Fua, Senior Engineer
David Knock, Senior Engineer
Tony Lam, Senior Engineer
Richard Latteri, Senior Engineer
Paul Mendoza, Senior Engineer
John Pacheco, Senior Engineer
Victor Pacheco, Senior Engineer
Dave Paulson, Senior Engineer
Amir Rangchi, Senior Engineer
Bhupinder Sandhu, Senior Engineer
James Upholt, Senior Engineer

Assisted by State Water Project Analysis Office staff

❖ ❖ ❖

Mike Abiouli
Frank Acuna
Bob Aldridge
Carolyn Allen
Ghassan Alqaser
Mary Ann Archuleta
Jamsheed Bahar
Melanie Baillie
Sal Batmanghilich
Ken Bucher
Jonathan Canuela
Stuart Chan
Victorino Chico
Kim Cotto
Barbara Crawford-Shelnutt
Janet Davis-Matsumoto
Alvin Eshe
Andrea Glasgow
Jerry Green
Trevor Greene
Norm Grundon
Haydeh Hakim-Edrissi
Jon Jones
Atil Karan
Charles Kearney
Hamid Kharazi
Spring Koyama
Sue Larsen
Tom Linnebur
Barry Mahoney
Rebecca Martello
Cherilyn Martin
Dave Marty
Marie McLean
Edgar Najera
Douglas Nelson
Laura Nelson
Do Nguyen
Isela Ortiz
Charles Owens
Wilson Perez
Sonny Punzalan
Linda Quok
Mark Risney
Jon Seehafer
Pat Separovich
Maureen Sergent
Mary Serrato
Donald Shelvock
Nancy Tagupa
Lee Terry
Pamela Tom
Jakim Tonn
Mike Torabian
Raymond Valdez
Cecilia Vasquez
Ilene Wellman-Barbree
Dietlind Wiesner
Jessica Winn
Janet Wolfe-Eshe
Darlessia Worthen
Kathleen Wright
Ahrash Zamanian
Reza Zamanian
Lupe Zamudio

State of California

DEPARTMENTAL DIVISIONS AND OFFICES

Information; financial and cost accounting data; or reviews of material provided by staff members of:

Executive Division
- Raymond D. Hart, Deputy Director
- L. Lucinda Chipponeri, Deputy Director for Legislation

Division of Operations and Maintenance
- Stephen L. Kashiwada, Chief
- Raphael A. Torres, Principal Engineer
- Tom Glover, Chief, Oroville Field Division
- Dave Duval, Chief, Delta Field Division
- Jim Thomas, Chief, San Luis Field Division
- Jeff J. Said, Chief, San Joaquin Field Division
- Don Perez, Chief, Southern Field Division

Division of Engineering
- Leslie F. Harder, Jr., Chief

Division of Fiscal Services
- Perla Netto-Brown, Chief

Division of Flood Management
- Stein Buer, Chief

Division of Land and Right of Way
- Frank L. Conti, Chief

Division of Technology Services
- Ben Williams, Chief

Division of Planning and Local Assistance
- Naser Bateni, Chief
- Dwight Russell, Chief, Northern District
- Karl P. Winkler, Chief, Central District
- Paula J. Landis, Chief, San Joaquin District
- Charles R. White, Chief, Southern District

Division of Safety of Dams
- Stephen W. Verigin, Chief

Office of State Water Project Planning
- Katherine F. Kelly, Chief

Office of Water Education
- Pete Weisser, Chief

Environmental Services Office
- Barbara McDonnell, Chief

Office of Chief Counsel
- Peggy Bernardy, Chief Counsel

California Energy Resources Scheduling
- Pete Garris, Acting Deputy Director

Office of Program Analysis and Support
- Douglas Priest, Chief

❖ ❖ ❖

Abbreviations and Acronyms

❖ ❖ ❖

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

BWSD Belridge Water Storage District

C

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

CalPX California Power Exchange

CCSG Cantua Creek Stream Group

CCWA Central Coast Water Authority or Contra Costa Water Agency

CCWD Contra Costa Water District

CD Conservation District

CDEC California Date Exchange Center

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

DBW Department of Boating and Waterways

DCVCWLNG Direct Cross Valley Canal Wheeling

DEIR draft environmental impact report

DFG California Department of Fish and Game

DHS California Department of Health Services

DLRD Delta Lands Reclamation District

DOE Department of Energy or Division of Engineering

DOI U.S. 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

EBRPD East Bay Regional Park District

ECAT Environmental Coordination Advisory Team

ECCID East Contra Costa Irrigation District

EHV Extra-High Voltage

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

G

GPM gallons per minute

H

HMP Hazard Mitigation Plan

I

ICR Information Collection Rule

IEP Interagency Ecological Program

IFDM Integrated on-Farm Drainage Management

INDP Interim North Delta Plan

ISDP Interim South Delta Program

ISI Integrated Storage Investigation

ISO California Independent System Operator

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

RMR Reliability Must-Run

RMS Reliability Management System

S

SAP System Application Products

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 *

SDIP South Delta Improvements Program

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

SJRA San Joaquin River Agreement

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

SPPC Sierra Pacific Power Company

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 Plan

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

WRMWSD Wheeler Ridge-Maricopa Water Storage District

WWD Westlands Water District

WSCC Western Systems Coordinating Council

Y

YCWA Yuba County Water Agency

*** State Water Contractor**

❖ ❖ ❖

Executive Summary

A Delta waterway with Mount Diablo
in the background

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 132-00, *Management of the California State Water Project,* continues the series with the thirty-seventh edition. It reports planning, construction, financing, managing, and operating activities of the SWP in 1999. The SWP is operated and maintained by the California Department of Water Resources.

New Director Appointed

Thomas M. Hannigan, a former legislator and county supervisor, was appointed Director of the Department of Water Resources on March 1, 1999. Hannigan is a veteran of public service at the city, county, and State levels. For 18 years, he was an Assemblyman from Solano County. From 1986 to 1996, he served as Majority Floor Leader in the Assembly. As a legislator, Hannigan supported a bill that put Proposition 204—the Safe, Clean, Reliable Water Supply Act—on the November 1996 ballot. He also authored legislation to provide funding for restoration of Delta levees.

1999 Highlights

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 to the long-term water contractors through its 17 pumping plants, 8 hydroelectric power plants (including 3 pumping-generating plants), 28 dams and reservoirs, and more than 660 miles of aqueducts and pipelines.

In 1999, the SWP delivered 4,095,269 acre-feet of water to 27 of its 29 long-term water contractors and 17 other agencies. The project provides water for approximately 22 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 to Southern California continued despite repairs to both the East and West Branches of the California Aqueduct during 1999.

The SWP facilitated the transfer or exchange of 144,894 acre-feet of entitlement water among SWP long-term contractors and non-SWP agencies, delivered 60,283 acre-feet of CVP water conveyed through SWP facilities, and provided 1,131,701 acre-feet to water rights holders within the SWP service area.

Construction of Phase I of the East Branch Extension for San Bernardino and Riverside Counties started on February 26, 1999, with the issuance of a Notice to Begin Work. The official groundbreaking ceremony took place on August 23, 1999.

The Department continued to be its own energy scheduling coordinator with the California Independent Systems Operator and to schedule the purchase and sale of energy to operate the SWP in 1999.

The project continued to pay bondholders as scheduled and remained financially viable. The long-term water contractors continued to repay project construction bonds and operating expenses. In 1999, the SWP handled approximately $600 million in income and approximately $600 million in expenses, with general fund contributions limited to recreation facilities.

1999 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 in Water Year 1998-99

Water year 1998-99 was the fifth wet year in a row for Northern California, but less so than the previous very wet year. Surface temperature patterns in the Pacific switched from El Niño to La Niña, and California precipitation followed a typical La Niña pattern of dry in Southern California and above average in the northern part of the State. The north to south gradient in annual precipitation, snowpack, and runoff in the southern Sierra Nevada was one of the steepest in California history.

The first part of October 1998 was drier than average but November was quite wet, nearly double normal in the northern Sierra. December started wet and then turned dry and very cold. It was the coldest winter since the big freeze of December 1990.

Estimated statewide precipitation for January was 95 percent of average. A major January storm brought a record-breaking 2.82 inches of precipitation, both snow and rain, to the City of Bakersfield over a 2-day period, providing almost half of the city's annual precipitation of 5.72 inches. Fast-moving storms in February produced great amounts of rain and snow in Northern California only, resulting in 200 percent of average precipitation in the north and 30 percent of average in the southeastern regions. March rainfall, slightly below normal, resulted in 80 percent of average precipitation statewide.

Strong shower activity during the first half of April in the coastal and desert regions boosted statewide precipitation to above average (125 percent) for the month. May was dry and cooler than normal. June was also dry in the northern part of the State. July, usually the driest month, was no exception in 1999, with monthly rainfall below average. August began cool, but ended with several days of over 100 degree temperatures in the Central Valley and scattered thunderstorms in Northern California. September was dry (about 25 percent of average precipitation). The water year closed with a statewide estimate of 95 percent of average precipitation.

Precipitation in the First Quarter of Water Year 1999-00

October 1999 was mainly dry, but a powerful Pacific storm brought substantial rain to Northern California at the end of the month, while the San Joaquin Valley and Southern California remained dry. November continued the strong north to south gradient, as precipitation was near average in Northern California and below average in the south. December was one of the State's driest winter months, with only 15 percent of normal monthly precipitation. By the end of December, Sierra precipitation had declined to 60 percent of average, while statewide precipitation had fallen to 40 percent of average, and the mountain snowpack contained only one-quarter of its average December 31 water content.

Runoff

Runoff in the Central Valley rivers in water year 1998-99 was less than water year 1997-98, but still well above average, except in the southern end of the Sierra from the Merced River south. Water year 1998-99 was classified as *above normal*, ending the run of 4 consecutive wet years on the San Joaquin River system.

Storage

Total storage in major SWP reservoirs was 3.66 million acre-feet on September 30, 1998, the end of water year 1998-99. Total storage in major SWP reservoirs at the end of calendar year 1999 was 3.53 million acre-feet.

1999 Water Supplies, Contracts, and Deliveries

Water Deliveries

In March 1999, the Department announced projected deliveries of 3.19 million acre-feet of entitlement water in 1999, 100 percent of the amount requested by the 29 long-term water contractors. Because of adequate snowpack and runoff in 1999, contractors did not require the entire amount they originally

Table ES-1
SWP Water Delivered by Category, 1962-99
(Acre-Feet)

Year	Entitlement Water			Other SWP Water Deliveries					Total Deliveries (9)
				Article 21					
	Municipal & Industrial (1)	Agricultural (2)	Total (3)	Municipal & Industrial (4)	Agricultural (5)	Other Water [a] (6)	Feather River Diversions [b] (7)	Fish and Wildlife/ Recreation Water (8)	
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	1,134,992	614,359	1,749,351	48,150	64,475	236,739	874,018	8,200	2,980,933
1995	801,570	1,165,523	1,967,093	17,984	46,346	78,425	860,077	2,575	2,972,500
1996	1,145,638	1,369,187	2,514,825	12,091	16,556	251,391	934,997	3,907	3,733,767
1997	1,258,456	1,067,319	2,325,775	2,814	18,618	322,000	993,211	4,146	3,666,564
1998	864,795	860,724	1,725,519	9,982	10,306	134,682	872,738	2,108	2,755,335
1999	1,405,299	1,333,592	2,738,891	61,191	96,879	85,312	1,108,672	4,324	4,095,269
Total	**25,270,278**	**23,423,604**	**48,693,882**	**377,153**	**5,926,344**	**6,871,592**	**26,353,862**	**119,023**	**88,341,856**

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

requested. SWP deliveries were greater in 1999 than 1998, due largely to drier conditions south of the Delta. The SWP met all contractors' demands for entitlement water. Table ES-1 shows SWP water deliveries by category for the years 1962-99.

The SWP delivered 2,738,891 acre-feet of entitlement water in 1999. This included 2,391,985 acre-feet delivered to 27 long-term water contractors; 130,969 acre-feet transferred to or exchanged with Westlands Water District; and 215,937 acre-feet of purchase pool water. In addition, a total of 158,070 acre-feet of Article 21 water was delivered to the SWP long-term contractors.

Nonproject Water. The long-term water contractors received 25,029 acre-feet of nonproject water, making a total of 2,921,990 acre-feet of entitlement and nonproject water delivered to the contractors.

The SWP also delivered 4,324 acre-feet of recreation/fish and wildlife water and 1,193,984 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 holding water rights to runoff from the Lake Del Valle watershed received 23,016 acre-feet of local water; 13 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 1,108,672 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.

In addition, the Department conveyed 60,283 acre-feet of CVP water through SWP facilities for USBR.

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

Aqueduct Repairs

Deliveries to Southern California continued despite repairs to both the East and West Branches of the California Aqueduct during 1999.

About $4.2 million worth of work to repair damage to canal lining and pipeline sections on the West Branch near Gorman and on the East Branch near Lancaster was completed in May 1999. This work consisted of relining damaged canal lining that had cracked and settled over time. While repairs were being done, deliveries were made through other parts of the Aqueduct from SWP's nearly full Southern California storage reservoirs.

Later in the year, repairs were made on approximately 3,500 linear feet of concrete canal at three locations along the East Branch near Palmdale. The $4 million repairs, which involved replacing broken concrete panels, sealing joints, and installing new watertight lining over the existing panels, were made during a low demand period while reservoirs at Silverwood and Castaic Lakes could provide water for uninterrupted deliveries. Work began the first week in November and crews labored around the clock to finish the repairs in a little over 3 weeks.

Monterey Amendments

In 1999, the Department executed one Monterey Amendment with Ventura County Flood Control District. Plumas County Flood Control and Water Conservation District and Empire West Side Irrigation District remain the only long-term water contractors who have not signed the Monterey Agreement.

Financial Analysis

In 1999, the Department continued to pay bondholders as scheduled. The SWP was financially viable and was indirectly paid for by the approximately 22 million water users who were served by the project. Direct payment was through the 29 long-term water contractors. In 1999, the SWP handled

1999 Income Statement for the State Water Project

Revenues	Thousands of Dollars
Water contractor payments	674,990
Revenue bond cover adjustments	(40,473)
Rate management adjustments	(32,000)
Other revenue	16, 400
Total operating revenues	**618,917**
Expenses	**Thousands of Dollars**
Project operations, maintenance, and power	346,916
Deposits to reserves	(275)
Water bond principal	85,905
Water bond interest	180,371
Total operating expenses and debt service	**612,917**
Net system revenues	**6,000**

approximately $600 million in income and $600 million in expenses. The sidebar above shows a 1999 income statement for the SWP.

Project Development

East Branch Extension

In 1999, construction began on Phase I of the East Branch Extension of the California Aqueduct, which 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.

The official groundbreaking ceremony for the East Branch Extension took place in Yucaipa on August 23, 1999. It is anticipated that the project will start operating in fall 2002.

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.

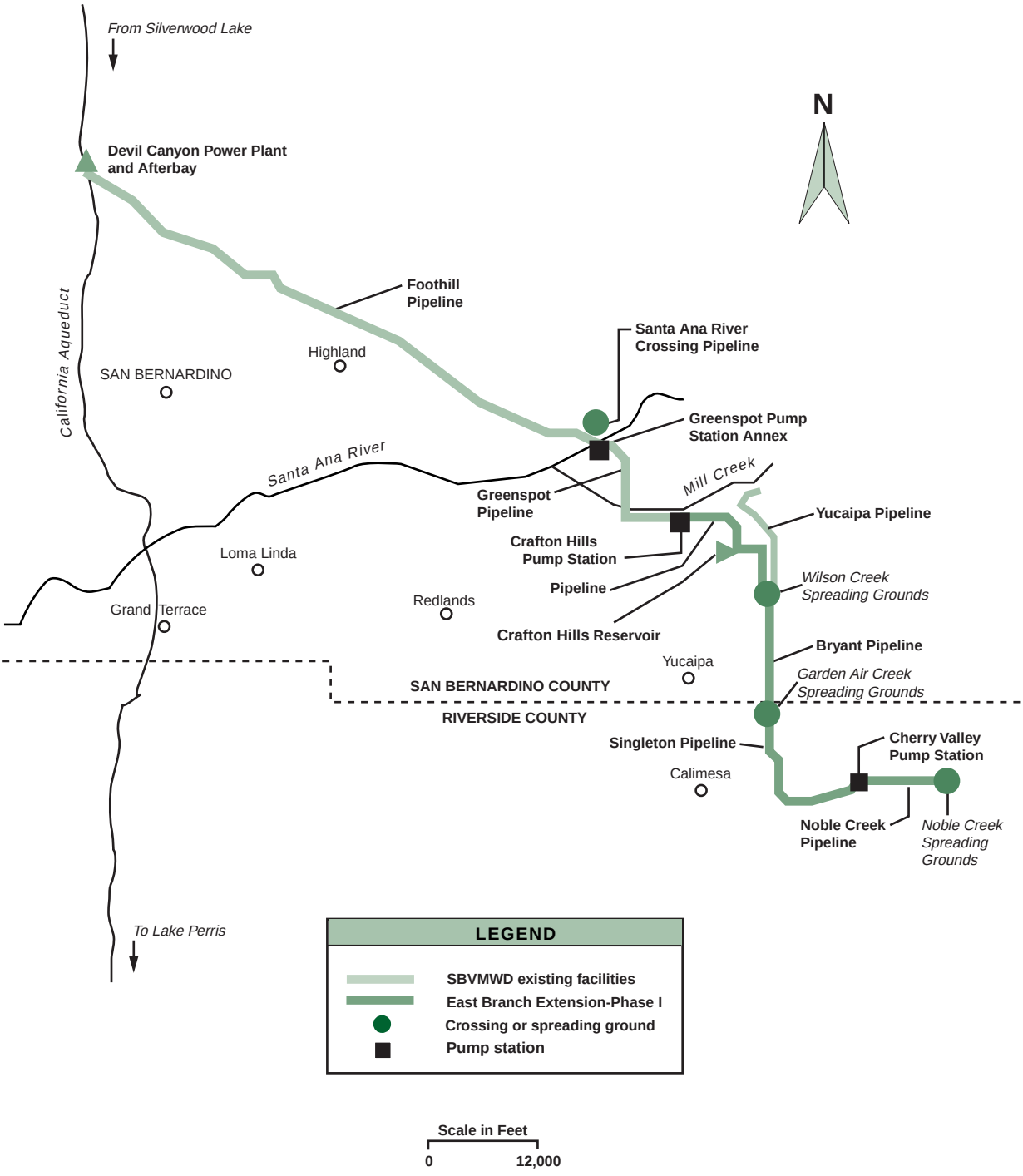
The completed East Branch Extension will include a reservoir in Crafton Hills and three pump stations—two of them new—that will link parts of SBVMWD's service area and the eastern part of SGPWA's service area to the California Aqueduct. Phase I will include construction of about 13 miles of new pipeline 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, Phase II of the East Branch Extension will be built to bypass the SBVMWD Greenspot pipeline and pump station, which have limited capacity.

The Phase I 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.

A map of the East Branch Extension, Phase I area, is shown in Figure ES-1.

Contracts Awarded. As of December 31, 1999, eight of the 14 anticipated construction contracts had

Figure ES-1
East Branch Extension, Phase I



been awarded for Phase I of the East Branch Extension.

In February 1999, a contract was awarded for pipeline Reaches 1 and 2, which start at Mill Creek in San Bernardino County and extend through the cities of Yucaipa and Calimesa to Garden Air Creek in Riverside County. Construction began with the issuance of a Notice to Begin Work on February 26, 1999. Fabrication of a 54-inch-diameter steel pipe started on May 26, 1999. A total of 1,100 sections will be required for this pipeline. As of December 31, 1999, more than 800 pipeline sections were being fabricated.

Work started in March 1999 on a contract to furnish power circuit breakers and switchyard equipment for Greenspot and Crafton Hills Pump Stations; a second contract to furnish power transformers for these facilities began in May 1999.

Work started in October 1999 on a contract to design, manufacture, test, and deliver switchgear for Greenspot and Crafton Hills Pump Stations. Three other contracts to furnish valves for the project were also awarded in October.

A contract to design, manufacture, test, and deliver turbine pumps for Greenspot, Crafton Hills and Cherry Valley Pump Stations began in November 1999.

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

Environmental Mitigation. 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.

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, and introduced species, 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.

Bay-Delta Water Right Hearings

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, SWRCB issued a draft Water Quality Control Plan 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 draft Plan. 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.

Bay-Delta Water Right Hearing. SWRCB addressed implementation of the 1995 Bay-Delta Plan through a water right hearing process staged in eight phases. During the hearings, held from July 1, 1998, though December 31, 1999, SWRCB heard 80 days of testimony and concluded phases 1 through 7 of the hearing process.

On December 29, 1999, SWRCB certified both the *Final Environmental Impact Report for Implementation of the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* and the *Final Environmental Impact Report for Consolidated and Conformed Place of Use*. Approval of these EIRs signified implementation of the 1995 Bay-Delta Plan and approval of the Department and USBR's request to be allowed to divert or redivert water from each others' points of diversion in the southern Delta.

Decision 1641. On December 29, 1999, SWRCB adopted Decision 1641. D-1641 addressed objectives to protect water quality and flow in the Delta. Under D-1641, the Department and USBR continue to be responsible for meeting water quality objectives for Delta outflow until the adoption of a new decision. The San Joaquin River Agreement/ Vernalis Adaptive Management Plan was established to measure the effects of flow and exports on San Joaquin fall-run chinook salmon.

Phase 8 of the Bay-Delta Water Right Hearings, the final allocation of responsibility for meeting Delta outflow objectives, will be considered by SWRCB in 2000 or early 2001.

CALFED Bay-Delta Program

The CALFED Bay-Delta Program is a cooperative effort among State and federal agencies and California's environmental, urban, and agricultural communities. CALFED was started 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 River system and the watershed that feeds them.

CALFED released the *Draft Programmatic Environmental Impact Statement/Environmental Impact Report for the Bay-Delta Program* on June 25, 1999, followed by a 90-day public comment period that ended September 23, 1999.

The Draft EIS/EIR is the result of 4 years of unprecedented collaboration among State and federal agencies and stakeholders that offers improvements to water suppliers, agriculture, business, and the environment. Following the public hearings, public comments were processed and refinements made to the draft program plan. A Final EIS/EIR is expected in June 2000. The plan proposes strategies to improve four interrelated Delta problem areas: ecosystem health, water quality, levee system integrity, and water supply reliability. The plan is expected to take 30 years to enact and cost in excess of $10 billion.

Integrated Storage Investigation. CALFED started the Integrated Storage Investigation in 1999 as part of its ongoing evaluation of the appropriate role of storage alternatives. The development and construction of new groundwater and/or surface storage will be linked with aggressive implementation of water conservation, recycling, and a protective water transfer market. Through ISI, CALFED will evaluate and determine the appropriate mix of surface water and groundwater storage; identify acceptable projects; and initiate permitting and construction, if program linkages and conditions are satisfied. ISI conclusions will be used to develop an integrated water management strategy that CALFED can implement. The Office of State Water Project Planning and the Division of Planning and Local Assistance are assisting CALFED with ISI.

In 1999, ISI began work on the In-Delta and Off-Aqueduct Storage Study to evaluate the value of connecting in-Delta storage facilities with south Delta export facilities. This study, coordinated by OSWPP, started evaluating five reservoir sites, which include storage areas in the Delta and reservoirs adjacent to the State and federal aqueducts south of the Delta.

South Delta Improvements Program

As part of the Interim South Delta Program, the Department pursued the construction of south Delta facilities to improve Delta water conditions while the CALFED Bay-Delta Program developed its long-term solution. The Department released a Draft Environmental Impact Statement/Environmental Impact Report for ISDP in July 1996; however, a Final EIS/EIR was never produced.

In 1999, CALFED decided that south Delta facilities should be included as a component of CALFED; subsequently, the program was renamed the South Delta Improvements Program. The new purpose for SDIP

was to improve the reliability of existing SWP south Delta facilities and operations; ensure that water of adequate quantity and quality was available for diversion within the South Delta Water Agency's service area; and help restore ecological health in the lower San Joaquin River and south Delta.

Preferred Plan. A preferred plan for SDIP was formulated, including such items as 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; and an additional intake to Clifton Court Forebay.

Environmental Review. Staff worked in 1999 on a Draft EIS/EIR for the SDIP. The Draft EIS/EIR is scheduled for release in early 2001 and a Final EIR/EIS is scheduled for release in late 2002.

Status of Threatened Listings

Steelhead Trout. The National Marine Fisheries Service listed Central Valley steelhead trout as threatened under the Federal Endangered Species Act in March 1998, but still had not adopted a 4(d) rule as of December 31, 1999. The 4(d) rule determines if and when NMFS needs to authorize the incidental take of the fish.

Chinook Salmon. NMFS listed Sacramento River spring-run chinook salmon as threatened under FESA in 1999 and determined that the Central Valley fall-run/late fall-run chinook salmon did not warrant listing, but remains a candidate species.

Splittail. U.S. Fish and Wildlife Service listed the Sacramento splittail as a threatened species under FESA. Sacramento splittail, a large minnow native to the Sacramento-San Joaquin Estuary, had been considered for listing since 1994.

Consultation on Listed Species. The Department and USBR consulted with NMFS and DFG about the potential impact of SWP and CVP operations on steelhead and spring-run chinook salmon. A 1-year biological opinion and take authorization for these species was developed in 1999. The Department and USBR, through the CALFED Operations Group, continued the Spring-Run Salmon Protection Plan to provide greater and more immediate protection for the species during fall 1999.

The Department and USBR also resumed consultation with USFWS to develop a splittail incidental take statement for operation of the SWP and CVP.

Mitten Crabs

An introduced species, the Chinese mitten crab created severe problems in 1998 for the fish salvage operation of the SWP and CVP, with nearly 25,000 crabs invading the Tracy Pumping Plant every day in early fall and about 10,000 entering the Skinner Fish Facility daily by October 1998.

To prevent these crabs from impacting the fish salvage operation in 1999, Department and USBR staff designed, built, and installed devices to deter the crabs. Department staff installed an underwater barrier near the Skinner Fish Facility to guide crabs crawling along the bottom into collection traps. USBR staff installed a travelling water screen near the Tracy Pumping Plant.

Only around 30,000 crabs were collected at Skinner Fish Facility in all of October 1999, indicating that the installed devices were effective in protecting SWP fish salvage operations. In addition, mitten crabs appeared at State and federal fish facilities in much smaller numbers than expected in fall 1999.

Power Resources

In 1999, SWP pumping plants consumed 5.76 billion kWh and power plants generated 5.67 billion kWh of energy. The Department sold 4.23 billion kWh of energy in 1999 to 27 utilities and 13 power marketers for total revenues of $104.15 million. The Department also received $22.36 million in revenues for capacity, exchanges, transmission arrangements, and ancillary services. The combined revenue was $126.5 million. The sidebar below documents 1999 SWP power generation and consumption.

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 an

application to the Federal Energy Regulatory Commission by January 31, 2005. Because of intense public interest in the relicensing processes, applicants for large projects typically start preparing 8 to 10 years before their existing license expires.

In April 1998, the Department formed the Oroville Relicensing Steering Committee to guide staff through the relicensing process. In 1998 this committee, composed of selected Department managers and supervisors, made recommendations on policy issues, consultant roles, FERC licensing procedures, and formation of a Department relicensing team.

In 1999, the committee recommended that the Department use FERC's Alternative Licensing Procedures, which encourage a collaborative stakeholder approach. FERC offers three relicensing procedures—traditional, hybrid, and alternative. The traditional process involves minimal FERC involvement, while the alternative procedures allow for more FERC involvement and stakeholder interaction.

Deregulation of Electric Utilities

The Department continued its role as a stakeholder and Scheduling Coordinator for the California Independent System Operator in 1999.

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

As a Scheduling Coordinator for ISO, the Department continued to sell spinning, nonspinning, and replacement reserves to ISO. The Department bid pump loads into nonspinning reserves to provide ISO more resources in case of system emergencies or contingencies. The Department also bought and sold energy not purchased or sold through bilateral agreements in the California Power Exchange's day-ahead market.

In 1999, the Department participated in stakeholder forums to address major issues surrounding deregulation, including development of ISO's transmission access charge and off-peak rates; converting existing transmission contracts to ISO service; unbundling ISO's grid management charge; redesigning the ancillary services markets; revising reliability must-run contracts; developing a firm transmission rights auction to purchase firm transmission capacity; creating a new congestion zone to address congestion within Path 26; and other issues of concern.

State Water Project Power Generation and Consumption in 1999

Power Generation and Consumption	Millions of Kilowatt Hours
Energy generation by SWP facilities	5,674
Energy purchased under long-term agreements	3,085
Short-term energy purchases	1,231
Total energy available to the SWP	9,989
Energy sales	(4,231)
Net power consumption of the SWP	**5,758**

The Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act

The Legislature passed Assembly Bill 1584, the Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Act, and the Governor signed the bill in 1999. The Act, if approved by California voters, will authorize the issuance of bonds in the amount of $1.97 billion for: (1) Safe Drinking Water Program; (2) Flood Protection; (3) Watershed Protection Program; (4) Clean Water and Water Recycling Account; (5) Water Conservation Program (Clean Water and Water Recycling Account); (5) Water Conservation Programs; and (6) Water Supply, Reliability, and Infrastructure Programs.

This bond measure will be placed on the March 7, 2000, ballot as Proposition 13.

Arroyo Pasajero

The Arroyo Pasajero and its tributaries drain approximately 530 square miles of the mountainous terrain west of the California Aqueduct in Fresno County. During periods of heavy rainfall, high flows in the Arroyo Pasajero and its tributaries transport heavy sediment loads from the mountains toward the California Aqueduct, which traverses the Arroyo's alluvial fan and forms a barrier to Arroyo flood flows. Flood control facilities include a detention 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.

Long-Term Programs. In 1990, the Department sought the assistance of the U.S. Army Corps of Engineers to identify long-term solutions to the Arroyo Pasajero flooding and sediment problems. The Arroyo Pasajero Feasibility Report—started in 1994 as a joint effort among the Corps, the Department, and USBR—provides a rigorous analysis of the flooding and sedimentation problems and evaluates potential solutions. The study is ongoing, with a projected cost of $7.86 million.

A Draft Feasibility Report and associated Environmental Impact Statement/Environmental Impact Report were released to the public in March 1999. A public meeting on the document was held in April 1999. Two candidate plans demonstrating a federal interest were presented, including

- 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.

Compelling comments opposing both candidate plans were received from the public and from agencies. The enlarged Westside Detention Basin alternative was criticized for discharging floodwater taken across the Aqueduct to a location inconsistent with recent historical pre-Aqueduct flooding patterns and was determined to be an unacceptable solution. USFWS and DFG deemed that the adverse impacts to listed species in the vicinity of the Pasajero Gap Dam could not be mitigated. Consequently, the Gap Dam plan was also determined to be unacceptable.

The investigation then focused on different alternatives. With this new direction in the investigations, federal authorization for a new project is not expected prior to a possible Water Resources Development Act in 2002.

Business Systems Update

System Application Products

The Department began planning for the implementation of the SAP Enterprise Resources Planning system in August 1998. On July 1, 1999, the Department implemented Phase I of the SAP system.

Phase I focused on the automation and integration of budgeting, purchasing, inventory, fixed assets time capture, position tracking, and cash management activities. The $18 million Phase 1 project included

hardware, software, and implementation by Deloitte & Touche Consulting Group.

The Department also began planning for Phase 2, which will include maintenance management and SWP operations functionality.

Y2K Update

By July 1999, the Department was ready for Year 2000. All critical systems, including the SWP, California Data Exchange Center, and fiscal systems, were remedied and tested, with contingency plans in place. The Department's Y2K plans were audited by two consultant firms working for the Department of Information Technology, whose auditors stated that the Department was, at that point, the best prepared agency in State government.

Joint contingency plans were developed with the State Water Contractors, and the Department also worked with other water industry organizations to ensure that deliveries of the State's water supply were not interrupted.

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. 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.

Silverwood Lake Bass Fisheries

The Department, working with DFG and the Bass Council, implemented a plan to revitalize the bass fishery at Silverwood Lake in northern San Bernardino County, including stocking the lake with about 3,500 Florida strain largemouth bass.

Special Publications

The *California State Water Project Atlas*, a new publication of SWP facilities with photographs and statistics, was published in 1999 and distributed to the State Water Contractors, major water organizations, and State legislators.

Chapter 1

The State Water Project

Aerial view of Thermalito Pumping-Generating Plant

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, which, in turn, creates 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 22 million of California's estimated 33 million residents benefit from SWP water; it 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, because 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 is October 1 through September 30.

Water Delivery Facilities

The SWP depends on a complex system of dams, reservoirs, power plants, 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.

Existing long-term SWP water supply contracts call for the annual delivery of 4,086,021 acre-feet of entitlement water by 1998 through SWP facilities,

Figure 1-1
Names and Locations of Primary Water Delivery Facilities
Current and Projected, December 31, 1999

gradually increasing to a maximum of 4,172,686 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. The SWP delivered 2,391,985 acre-feet of entitlement water to long-term water contractors' service areas in 1999. 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. 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. 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, and is temporarily stored for release back to the California Aqueduct to meet summertime peaking demands of 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, 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, home to about two-thirds of California's population. Before this 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, water flows through the San Bernardino Tunnel into Devil Canyon Power Plant. 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 Power Plant Afterbay to Cherry Valley, bringing water to Yucaipa, Calimesa, Beaumont, Banning, and other communities. When completed, the East Branch Extension will be a nearly 33-mile pipeline linking parts of service areas for San Bernardino Valley Municipal Water District and San Gorgonio Pass Water Agency to the California Aqueduct. Phase I is planned for completion in 2001; planning for Phase II is underway.

Water in the West Branch flows through Warne Power Plant into Pyramid Lake in Los Angeles County. From there it flows through the Angeles Tunnel, Castaic Power Plant, Elderberry Forebay and Castaic Lake, terminus of the West Branch. Castaic Power Plant 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 coal-fired plant and the project's eight hydroelectric power plants, including three pumping-generating plants, produce enough electricity in a normal year to supply about two-thirds of the necessary operating power.

Tables 1-1 through 1-5 present statistical information about primary reservoirs, primary dams, pumping plants, power plants, 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 SWP storage, 1,062,183 AF	2,027,800	12,520	65
O'Neill Forebay SWP storage, 29,500 AF	56,400	2,700	12
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
Power Plant 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
Geothermal				
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 of the 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 these 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 plans for Los Banos Grandes were completed, but additional planning has been suspended until environmental 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 Power Plant was completed in 1996. The enlarged Devil Canyon Power Plant and the new Devil Canyon Power Plant Second Afterbay became operational in 1995. Phase II 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 several 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; 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 4,172,686 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 water supply contract. The 29 agencies and districts that now have long-term contracts with the Department as of December 31, 1999, 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, 1999

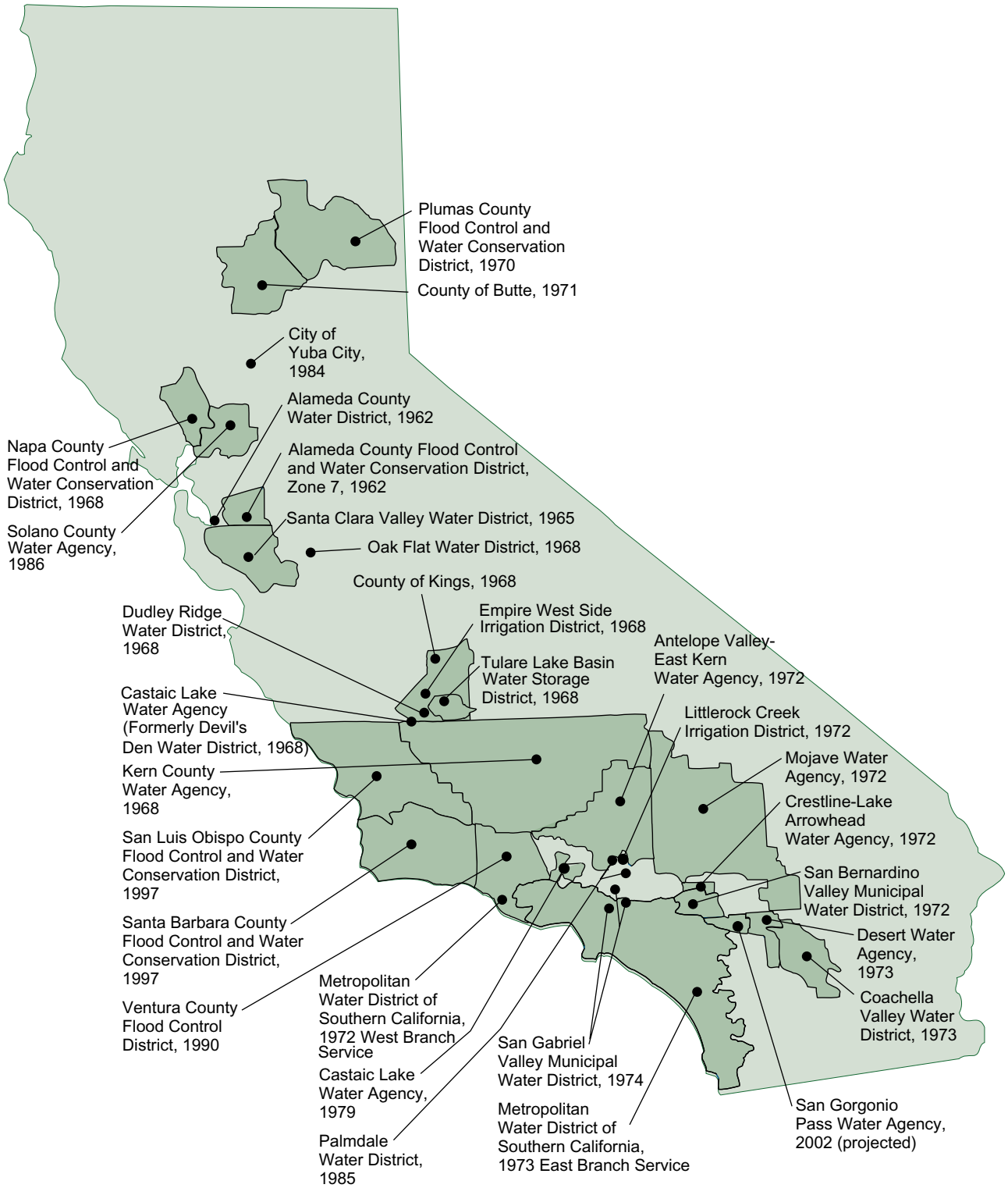


Table 1-6
Long-Term Water Supply Contracting Agencies, by Area, as of December 31, 1999

Contracting Agency	Cumulative Deliveries through December 31, 1999 (Acre-Feet) [a]	Maximum Annual Entitlement (Acre-Feet)	Payments through December 31, 1999 (Dollars)	Gross Area as of December 31, 1999 (Acres)		Assessed Valuation 1999 (Dollars) [b]		Estimated Population December 31, 1999	
Upper Feather River Area									
City of Yuba City	9,359	9,600	2,141,262	5,107		1,126,662,000		34,350	
County of Butte	8,887	27,500	541,313	1,069,000		6,239,500,000		172,600	
Plumas County Flood Control and Water Conservation District	10,472	2,700	1,070,773	1,676,056	c	2,060,744,342	c	21,200	
Subtotal	*28,718*	*39,800*	*3,753,348*	*2,750,163*		*9,426,906,342*		*228,150*	
North Bay Area									
Napa County Flood Control and Water Conservation District	171,212	25,000	43,708,289	510,010		11,375,403,517		124,588	
Solano County Water Agency	317,684	42,000	55,565,886	537,600		19,489,682,982		383,620	
Subtotal	*488,896*	*67,000*	*99,274,175*	*1,047,610*		*30,865,086,499*		*508,208*	
South Bay Area									
Alameda County Flood Control and Water Conservation District-Zone 7	785,802	68,000	58,221,974	275,900		12,592,234,275		172,750	
Alameda County Water District	799,832	42,000	62,062,352	65,806		24,333,736,000		318,250	
Santa Clara Valley Water District	2,847,288	100,000	195,749,848	849,000		147,074,863,200		1,715,374	
Subtotal		*210,000*	*316,034,174*	*1,190,706*		*184,000,833,475*		*2,206,374*	
San Joaquin Valley Area									
County of Kings	71,837	4,000	2,830,713	893,300		3,847,066,037		122,848	
Castaic Lake Water Agency	423,408			8,700		4,300,000		0	
Dudley Ridge Water District	1,640,079	53,370	46,076,466	37,568		44,500,000		36	
Empire West Side Irrigation District	92,593	3,000	2,432,965	7,400			d	50	
Kern County Water Agency	25,329,220	1,020,730	1,076,739,913	5,161,000		36,509,755,659		603,300	
Oak Flat Water District	161,802	5,700	3,722,254	4,500			d	10	
Tulare Lake Basin Water Storage District	3,652,796	118,500	94,476,174	189,519		152,288,305		23	
Subtotal	*31,371,735*	*1,205,300*	*1,226,278,485*	*6,301,987*		*40,557,910,001*		*726,267*	
Central Coastal Area									
San Luis Obispo County Flood Control and Water Conservation District	8,534	25,000	30,686,277	2,131,300		15,442,814		241,600	
Santa Barbara County Flood Control and Water Conservation District	47,434	45,486	126,041,847	1,775,296		12,564,719,323		414,200	
Subtotal	*55,968*	*70,486*	*156,728,124*	*3,906,596*		*12,580,162,137*		*655,800*	
Southern California Area									
Antelope Valley-East Kern Water Agency	1,101,989	138,400	241,902,901	1,525,547		11,661,403,243		310,000	
Castaic Lake Water Agency [e]	273,723	95,200	113,945,520	133,700		12,073,683,645		184,700	
Coachella Valley Water District	585,818	23,100	115,833,610	637,600		11,132,616,000		279,300	
Crestline-Lake Arrowhead Water Agency	33,886	5,800	14,863,989	55,100		1,500,527,807		25,000	
Desert Water Agency	814,543	38,100	143,097,885	209,760		4,377,080,770		62,000	
Littlerock Creek Irrigation District	13,993	2,300	4,094,589	10,000		106,085,538		2,900	
Metropolitan Water District of Southern California	17,107,913	2,011,500	5,019,360,875	3,307,802	f	999,704,336,150	f	16,876,000	f
Mojave Water Agency	155,348	75,800	111,473,810	3,160,400		13,300,357,119		353,391	
Palmdale Water District	105,834	21,300	33,005,951	119,680		807,757,000		85,000	
San Bernardino Valley Municipal Water District	311,609	102,600	260,972,417	210,000		14,907,805,419		600,000	
San Gabriel Valley Municipal Water District	235,761	28,800	82,033,182	18,297		8,826,776,962		211,850	
San Gorgonio Pass Water Agency	0	17,300	37,411,571	140,600		1,945,425,320		44,600	
Ventura County Flood Control District	11,374	20,000	30,994,792	308,252		21,957,265,429		457,000	
Subtotal	*20,751,791*	*2,580,200*	*6,208,991,092*	*9,836,738*		*1,102,301,120,402*		*19,491,741*	
Total, State Water Project	**57,130,030**	**4,172,786**	**8,011,059,398**	**25,033,800**	**g**	**1,379,732,018,856**	**g**	**23,816,540**	**g**

[a] All water delivered to long-term SWP contractors, including carryover entitlement, Article 21, 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 1981-82 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

Channel east of Woodward on Middle River in the Sacramento Delta

Significant Events

- Temporary barriers were installed during 1999, including the Grant Line Canal barrier, which was installed and operated for the third time in the history of the Temporary Barriers Project.
- A preferred plan for South Delta Improvement Program is being formulated as part of the ongoing process of preparing project-specific environmental documentation.

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). However, the listing of several Bay-Delta fish species under the Endangered Species Act resulted in additional operational restrictions on the SWP, which caused considerable uncertainty as to the benefits the SWP would obtain as a result of implementing these programs. Further complicating this issue were the promulgation of new Delta standards by the federal Environmental Protection Agency and the implementation of 800,000 acre-feet of Central Valley Project yield for fish and wildlife protection under the 1992 Central Valley Project Improvement Act.

In June 1994, a Framework Agreement between federal and State governments defined a joint federal-State 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 was formed to develop the long-term Delta "solution." The program includes extensive public outreach and input.

South Delta Improvements Program

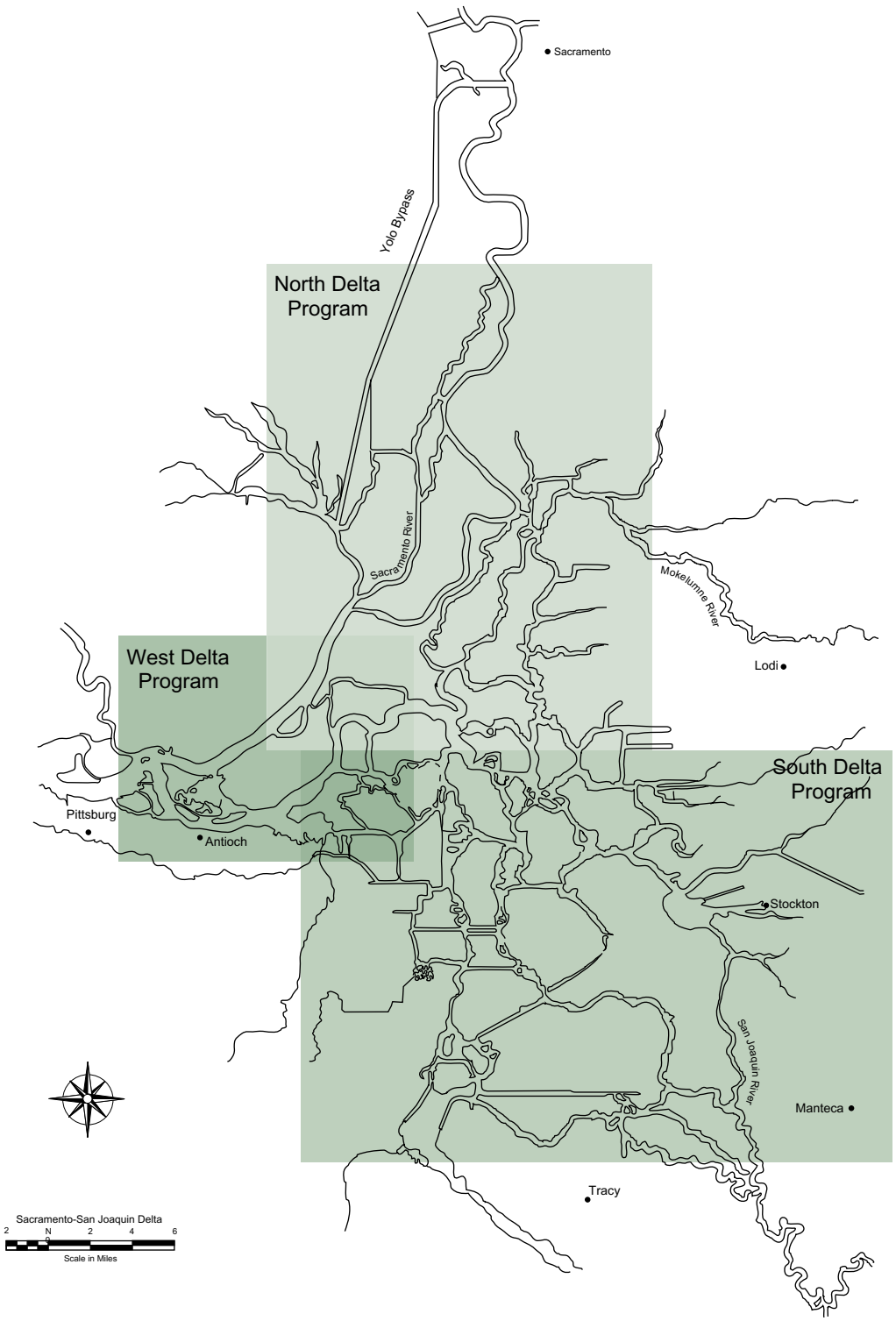
During the late 1990s, the Department pursued the accelerated construction of south Delta facilities to improve Delta water conditions (the Interim South Delta Program) while awaiting the independent development of the CALFED Bay-Delta Program's long-term solution. The Department released a Draft EIS/EIR for ISDP in July 1996; however, a Final EIS/EIR was never produced. In 1999, the CALFED Bay-Delta Program decided that south Delta facilities would be included as a key component of the CALFED decision-making process. Subsequently, the program was renamed the South Delta Improvements Program. The purpose of SDIP has been slightly revised from that of the former ISDP. The new purpose for SDIP is to

- improve the reliability of existing SWP facilities;
- ensure that water of adequate quantity and quality is available for diversion to the South Delta Water Agency's service area for beneficial use; and
- reduce the effects of SWP exports on both aquatic resources and direct losses of fish in the south Delta.

Preferred Plan. A preferred plan for SDIP is being formulated as part of the ongoing process of preparing project-specific environmental documentation. It is likely to consist 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;

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



- approximately 5 miles of dredging in existing south Delta channels to improve conveyance and circulation;
- additional site-specific dredging in the south Delta;
- modifications to existing agricultural diversion intakes;
- an additional intake to Clifton Court Forebay north of the existing intake;
- fish screening and salvage facilities at the new northern intake that will replace the existing Skinner Fish Facility**;** and
- increasing the maximum allowable 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 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 improve conditions for local agricultural diverters in the south Delta who divert water in the vicinity of the project export facilities. The fish-control structure would benefit both spring and fall salmon migrations in the San Joaquin River.

Environmental Review Process. A Draft EIS/EIR for the SDIP is scheduled for release in early 2001 and a Final EIR/EIS is scheduled for release in late 2002. 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 Department of Fish and Game.

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 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 SDIP.

In addition, biological monitoring programs have been 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.

Temporary rock barriers are installed on an annual basis, during low flow conditions, 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.

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 in 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 Sherman and Twitchell 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 of the three trustees' positions for Reclamation District 1601 (Twitchell Island) and Reclamation District 341 (Sherman Island). This allows the Department to oversee 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.

North Delta Program

In 1999, stakeholder meetings were held through the CALFED Bay-Delta Program.

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 recognized the importance of the Delta after the floods of the early 1980s and 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, Jersey, Sherman, and Twitchell Islands; Holland, Hotchkiss, and Webb Tracts; and the towns of Thornton and Walnut Grove.

Currently, the program has received more than $97 million in appropriated funds and, combined with local funds, has realized $128 million in levee improvements. Approximately $12 million of these funds were provided by Proposition 204. 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 the northern Suisun Bay from Van Sickle Island to Montezuma Slough. Delta flood control program staff at the Central District is developing a prioritization process for distributing funds under AB 360. Appropriations for the program run out on June 30, 2000, and a budget proposal has been made for continued funding.

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 Program 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 also approves 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.

After SRB approval, agreements are executed between SRB and each participating district. These agreements state that eligible work will be completed during the current 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, 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. The long-term plans are used by the

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.

Department to determine how to best use appropriations to protect these islands and include

- rehabilitation of threatened levees through the use of imported dredged material;
- verification of 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. In 1999, the program continued to develop 282.7 acres of various types of habitat for flood mitigation and 19.38 acres for enhancement. The program is also in the process of developing 36,350 linear feet of shaded riverine aquatic habitat, of which 12,898 linear feet will be used for mitigation and 23,452 linear feet for enhancement.

Completed mitigation and enhancement projects include

- Medford Island
- Terminous Tract
- Twitchell Island setback levee
- Staten Island berm and channel islands
- Wright Elmwood Tract
- Thornton–New Hope Tract (Grizzly Slough)
- Palm Tract
- Bethel Island, and
- Canal Ranch attached berm

Projects underway include

- Decker Island
- Lower Sacramento River revegetation, Grand Island in participation with the Corps
- Kimball Island
- Prospect Island
- Sherman Island berm
- Sherman Island Parcel 11
- Webb Tract Site 3
- Franks Tract, and
- the last phase of Tyler Island

Projects that have been proposed include Veale Tract and McCormack-Williamson Tract.

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 initiation of the Delta Flood Protection Act, the Department began monitoring subsidence and studying 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.

In 1999, 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 impact 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;
- 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 San Francisco 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. This project will be initiated by a demonstration project with 150,000 cubic yards coupled with an intense monitoring program; and
- levee restoration and habitat projects proposed or under construction.

Levee restoration and habitat projects worked on in 1999 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;
- design of a 42-acre island for habitat restoration on Franks Tract;
- levee repair of areas with stability and seepage problems on Webb Tract; and
- design 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 most levees should be high enough to protect against overtopping by flood stages with a 300-year flood. The minimum freeboard should be 1.5 feet for levees protecting agricultural land, and 3 feet for levees protecting urban areas. A typical improved levee section should have a 16-foot crown width with a waterside slope of 2 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 provided for investigation of 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 included environmental and wildlife habitat restoration measures. The study also considered the Department's management plans for water supply and flood control when developing alternatives for a comprehensive Delta plan.

This 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*, described 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 continues to be 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 current efforts are to

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

In addition, a joint program has been planned to 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 CVP on water levels, quality, and circulation in the south Delta.

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.

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 ISDP. In 1999, data collected in the Temporary Barriers Program assessed the barriers' ability to reduce or eliminate adverse water levels and improve local hydraulic circulation patterns.

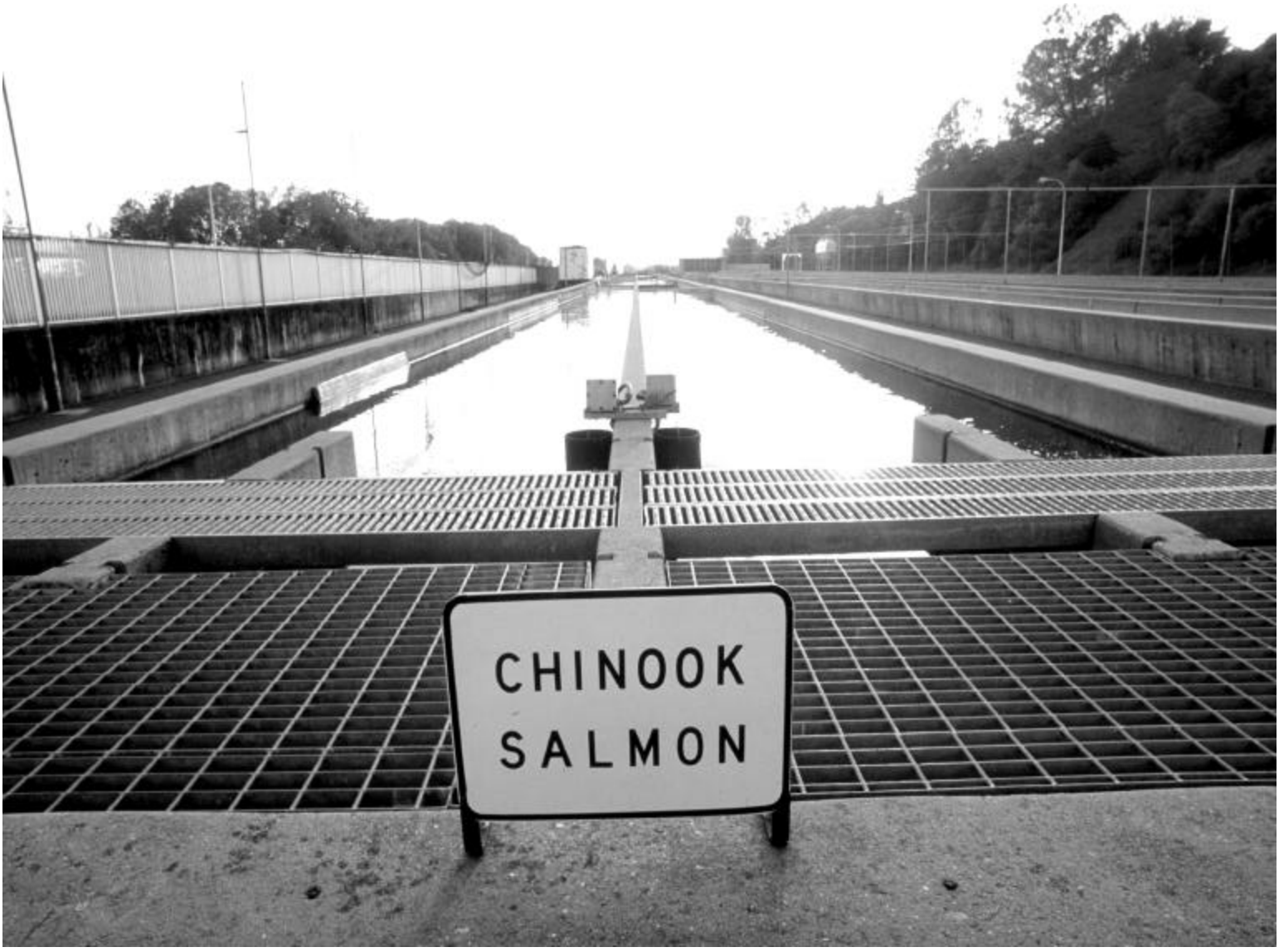
Western Delta Municipal Water Users

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



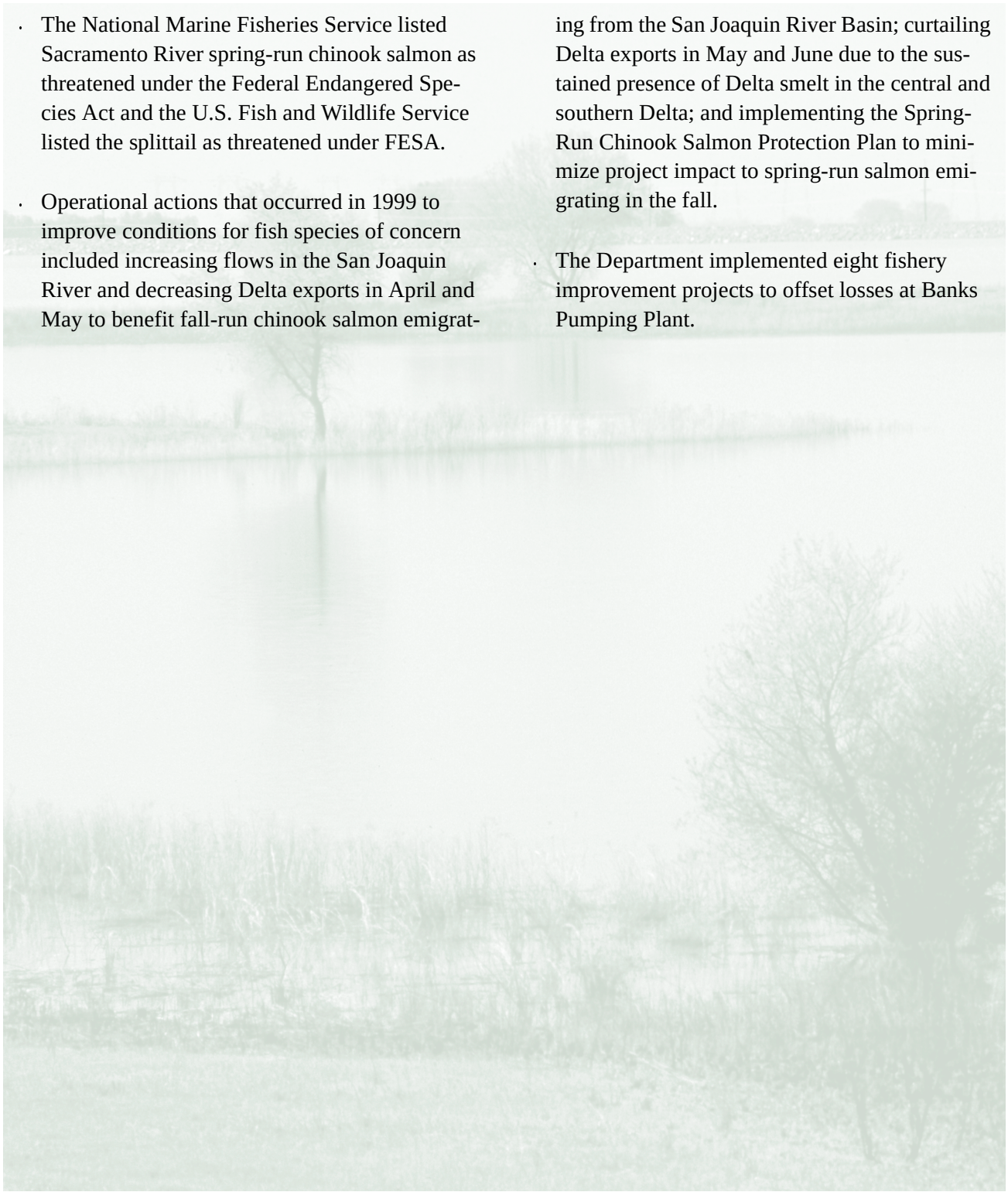
Feather River Fish Hatchery in Oroville, constructed to compensate for loss of salmon spawning grounds when Lake Oroville was created

Significant Events

- The National Marine Fisheries Service listed Sacramento River spring-run chinook salmon as threatened under the Federal Endangered Species Act and the U.S. Fish and Wildlife Service listed the splittail as threatened under FESA.

- Operational actions that occurred in 1999 to improve conditions for fish species of concern included increasing flows in the San Joaquin River and decreasing Delta exports in April and May to benefit fall-run chinook salmon emigrating from the San Joaquin River Basin; curtailing Delta exports in May and June due to the sustained presence of Delta smelt in the central and southern Delta; and implementing the Spring-Run Chinook Salmon Protection Plan to minimize project impact to spring-run salmon emigrating in the fall.

- The Department implemented eight fishery improvement projects to offset losses at Banks Pumping Plant.



The Department of Water Resources has developed and put into action several programs to avoid, minimize, or offset any adverse impact 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 SWP operations is key to avoiding and minimizing adverse impacts to fish of concern. Operational responses can include Delta Cross Channel gate closure, export curtailments, changes in delivery schedules, increased reservoir releases, preferential use of certain facilities, or a combination of these actions.

San Joaquin River Activities

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 mid-April through mid-May (pulse flow period), to benefit fall-run chinook salmon emigrating from the San Joaquin River Basin. Several studies intended to estimate the relative survival of marked salmon moving through the Delta were performed at the same time as the pulse flow. The goal is to conduct operational changes and associated studies over a number of years to determine if a relationship exists between river flow, Delta exports, and salmon survival through the Delta. The resulting information will be used to determine if changing San Joaquin River flows and Delta exports in the spring can significantly benefit San Joaquin River fall-run chinook salmon.

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. Varied export pumping rates were coordinated with fisheries collection efforts under VAMP from April 17 to May 17 (the pulse flow period). The San Joaquin River Agreement is an effort by water right holders to satisfy the goals of the Bay-Delta Accord.

As part of VAMP, temporary barriers were constructed to

- provide an adequate water supply for south Delta water diverters;
- improve water quality conditions in the Stockton Deep Water Channel; and
- prevent chinook salmon from entering Old River, thereby reducing the likelihood of entrainment at the south Delta facilities.

Temporary barriers were installed on Middle River and Old River near Tracy on June 1, 1999, and the Grant Line Canal barrier was completed on June 3, 1999. The barriers were removed on October 1 due to the end of irrigation water needs and possible conflicts with winter-run salmon.

Spring-Run Chinook Salmon Protection Plan

The Protection Plan outlines a monitoring program, identifies indicators that would trigger a response, and identifies possible actions to minimize SWP and Central Valley Project impacts on emigrating yearling spring-run salmon. Flow, turbidity, and either fish movement or fish presence are all continuously monitored using in-stream measurements, surveys, and fish screw traps. Potential triggers include an increase in flows or turbidity in the Sacramento River and its tributaries, fish migration toward the Delta, and the detection of spring-run salmon at the export facilities. Possible actions include the closure of the Delta Cross Channel gates and export reductions. Implementation of the Plan continued in 1999.

The gates were closed several times in November and December because fish sampling found young salmon in the north Delta.

Delta Export Curtailments Due to Delta Smelt

The biological opinion on the effects of SWP/CVP operations on Delta smelt uses the combined (SWP and CVP) Delta smelt salvage as a threshold to reinitiate consultation between USFWS, USBR, and the Department. If needed, further actions are taken to reduce water project impact 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.*

The red-light level is based on historical salvage data and varies by month and water year type. For example, in an above-normal water year, 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. 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.

In 1999, combined Delta smelt salvage frequently exceeded the specified take levels from mid-May through early July. The yellow-light level was exceeded on May 19, and the red-light level (9,769 Delta smelt) was exceeded the following day. By the end of May, total monthly salvage (58,943 Delta smelt) exceeded the red-light level by more than six-fold. The SWP and CVP combined salvage remained high throughout June. On June 6, the take limits already exceeded the red-light level (10,709 Delta smelt). By June 18, Delta smelt salvage declined and, in response, combined pumping was increased on June 20. On June 23, combined salvage increased greatly for 2 days, with even greater numbers of Delta smelt salvaged on June 29 and 30 (more than 22,500 Delta smelt). Combined salvage by June 30 (73,368 Delta smelt) exceeded red-light levels by seven-fold. Delta smelt salvage declined after July 3, and combined salvage fell below the yellow-light level by mid-month.

In response to high Delta smelt salvage, several actions were implemented by the CALFED Operations Group and its subgroups—the No-Name Group, the Data Assessment Team, and the Delta Smelt Work Group. These actions included SWP export reductions from May 27 through May 31 and again from June 7 through June 12. Other actions included

- initiation of reconsultation with USFWS;
- closure of the Delta Cross Channel gates until May 28;
- delay of a proposal to relax the export/inflow ratio until after the end of June; and
- establishment of No-Name Group conference calls to develop mechanisms to deal with incidental take of Delta smelt in future years.

Decisions to List Additional Fish Species

Federal fish and wildlife agencies listed additional fish species as threatened in 1999. Listing increases a species' impact on project operations. NMFS listed Central Valley steelhead trout as threatened under FESA in March 1998, but still had not adopted a 4(d) rule as of December 31, 1999. The 4(d) rule determines if and when NMFS needs to authorize the incidental take of the fish.

NMFS listed Sacramento River spring-run chinook salmon as threatened under FESA in 1999 and determined that the Central Valley fall-run/late fall-run race did not warrant listing but remains a candidate species. Sacramento River spring-run chinook salmon were listed as threatened under the California Endangered Species Act in 1998.

The Department and USBR consulted with NMFS and DFG about the potential impact of SWP and CVP operations on steelhead and spring-run chinook salmon. A 1-year biological opinion and take authorization for these species were provided in 1999. The

Department and USBR, through the CALFED Operations Group, continued the Spring-Run Chinook Salmon Protection Plan to provide greater and more immediate protection for the species during fall 1999.

USFWS listed splittail as threatened in 1999. This species had been considered for listing since 1994. USBR and the Department resumed consultation with USFWS to develop an incidental take statement for operation of the SWP and CVP.

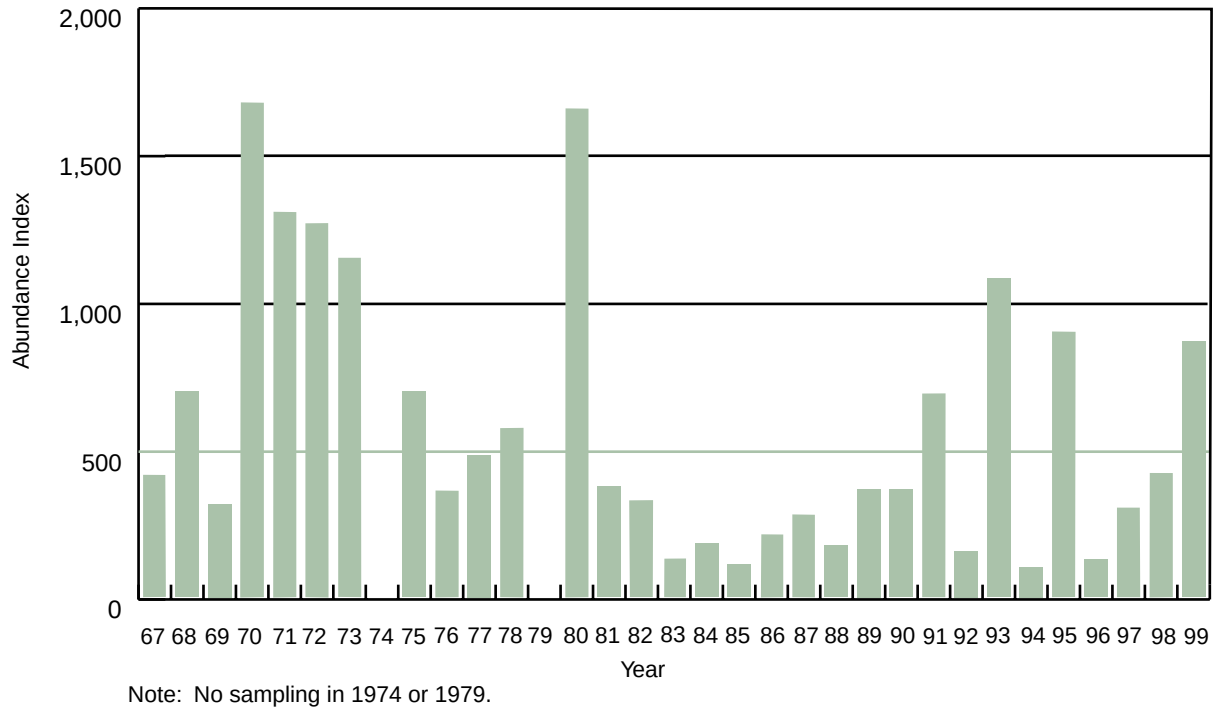
Fish Population Estimates

Figure 3-1 shows the abundance index for Delta smelt from 1967 through 1999, based on fall midwater trawl sampling. The fall abundance index is significant because it provides one of the best indicators of the status of the adult Delta smelt population. The index for 1999 showed a noticeable increase over sampling results from 1996 through 1998. Scientists do not know what causes these variations in abundance.

Figure 3-2 shows estimates of returning adult winter-run chinook salmon from 1967 through 1999. The estimates are referred to as escapement estimates—the number of adults that escape mortality and return to spawn. The estimated escapement for 1999 was 3,200, which more than tripled the estimated 900 adults in the parent stock of 1996. This is a positive sign for winter-run salmon, as it demonstrates a continued increase of the reproductive population. Factors such as improved spawning and rearing habitat, reduced losses in the Delta, and reduced commercial fishing losses are all thought to have benefited winter-run salmon.

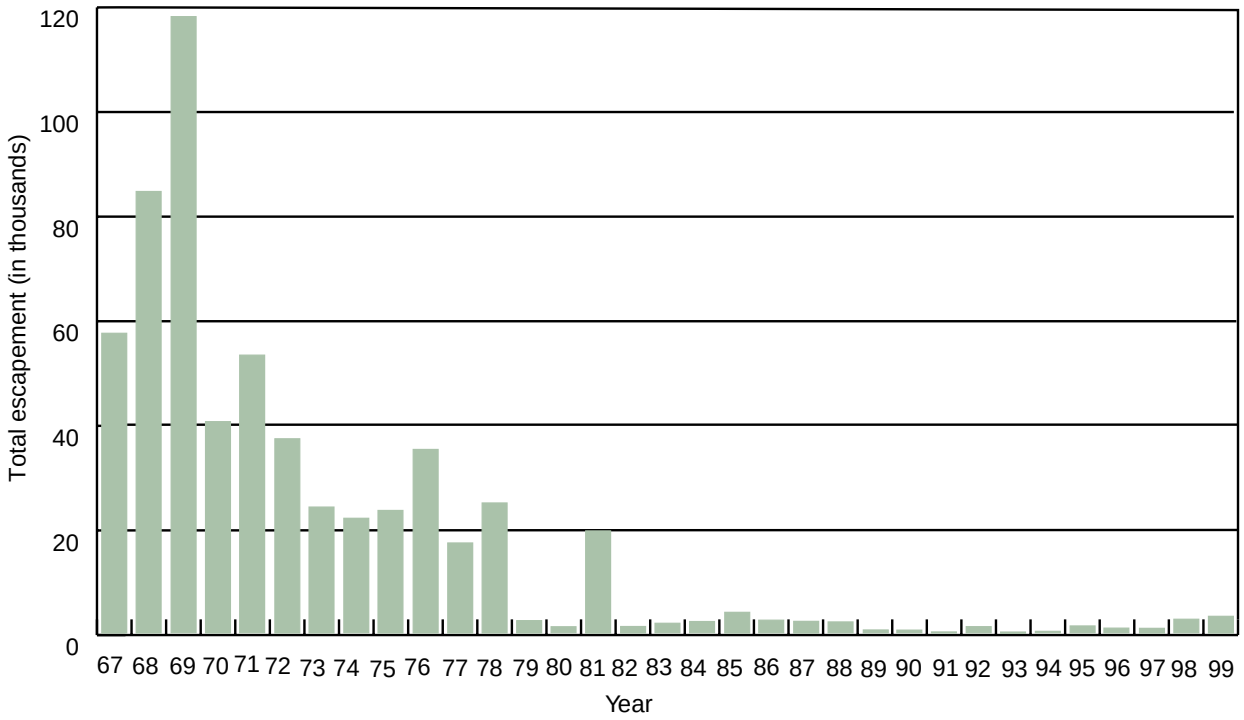
Figure 3-3 shows estimates of returning adult spring-run chinook salmon for the period 1990 through 1999. Individual estimates are shown for Deer Creek, Mill Creek, Butte Creek, and the Feather River—the principal spawning streams for this race of salmon. The escapement estimates are shown separately for each stream because the Feather River estimate is based on returns to Feather River Hatchery, where the genetic integrity of spring-run chinook salmon is uncertain. The estimated escapement for 1999 was 3,730 for the Feather River Hatchery and about 5,750 for the other streams combined. The 1999 Feather River Hatchery escapement is only about 60 percent of the 1996 parent stock escapement, but the 1999

Figure 3-1
Delta Smelt Fall Midwater Trawl Abundance Index, 1967 through 1999



Note: No sampling in 1974 or 1979.

Figure 3-2
Estimated Total Winter-Run Chinook Salmon Escapement, 1967 through 1999



escapement of naturally spawned fish more than doubled that of 1996. Factors such as improved spawning and rearing habitat, reduced losses in the Delta, and reduced commercial fishing losses are all thought to have benefited spring-run salmon.

Due to lack of comprehensive monitoring programs, there are no reliable escapement estimates for Central Valley steelhead.

Figure 3-4 shows the fall midwater trawl index for young-of-the-year splittail for the period 1967 through 1999. The 1999 index was lower than 1998, but this was not surprising, since the 1998 index was the highest on record. The 1999 index was slightly above average for the period of record. Splittail reproduce in spring and appear to have higher reproductive success in years when ample seasonally flooded habitat (such as Sutter and Yolo Bypasses) is available. This habitat was available for a portion of the splittail spawning season in 1999.

Feather River Fish Studies

Joint Department and DFG salmon studies continued in 1999 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 1999 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. This type of excessively localized spawning activity appears to be related to salmon density and flow distribution. It appears that an increased flow from the low-flow channel may attract more salmon to the upper reach of the river, exacerbating the problem. This effect may outweigh benefits

Figure 3-3
Estimated Spring-Run Chinook Salmon Escapement, 1990 through 1999

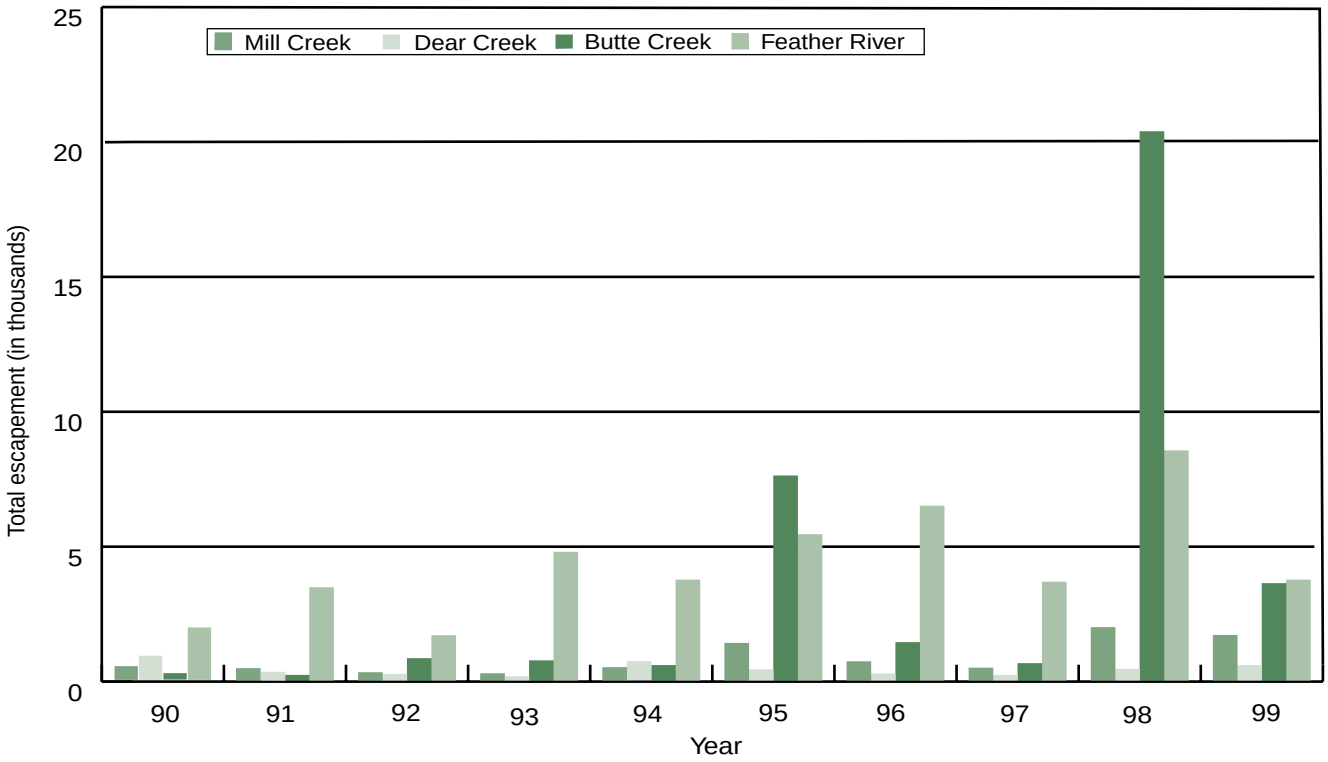
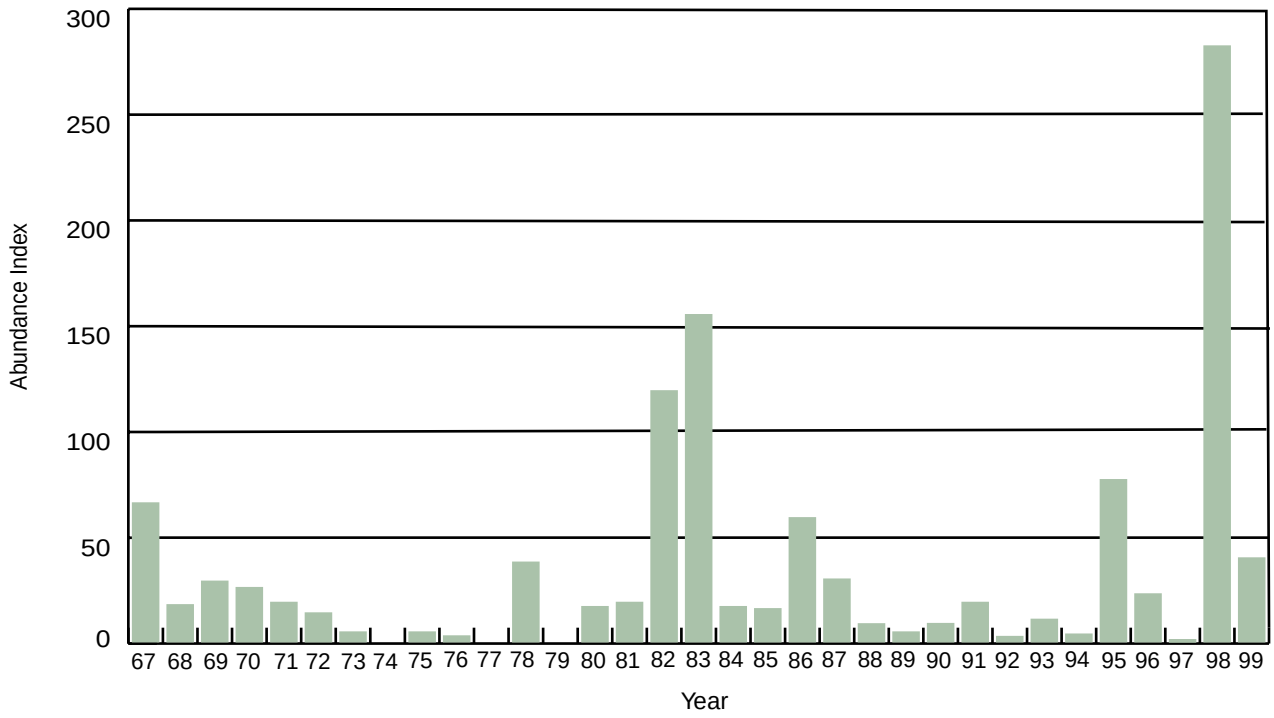


Figure 3-4
Young-of-the-Year Splittail Abundance Index, Fall Midwater Trawl, 1967 through 1999



Note: No sampling in 1974 and 1979. Insufficient data in 1977.

from the increased spawning areas available at higher flows. A yearly trend toward higher densities of salmon spawning immediately downstream of the Feather River Hatchery suggests hatchery operations may also play a role in spawning superimposition. This hypothesis will be 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 facility. 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 $30 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 migration flows in Mill Creek in Tehama County, constructing fish ladders and screens on Butte Creek, constructing 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 to increase protection for spring-run salmon.

In 1996, DFG and the Department amended the agreement to

- provide another 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 lump sum 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 1999 for implementation from the agreement's annual and $15 million lump sum funds include

- a 3-year extension of increased law enforcement protection for spring-run salmon on the upper Sacramento River tributaries during adult migration, summer hold-over, and spawning;
- stocking 151,000 yearling striped bass in 1999 with plans to stock up to 1,275,000 yearlings in 2000 and 2001;
- more funding for 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; and
- operating a pen to acclimate hatchery-reared salmon during their release into San Pablo Bay to improve their chances of survival.

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

Chapter 4
Water Quality Programs

Conducting water quality testing in mobile lab unit

Significant Events

- On June 25, 1999, the CALFED Bay-Delta Program issued its Draft Programmatic Environmental Impact Statement/Environmental Impact Report outlining its plan to restore the health of the Bay-Delta, provide a reliable water supply for all uses, and improve water quality in California. The release of the Draft EIS/EIR began a 90-day public review period that included 15 public hearings held throughout the State from August 18 through September 22, 1999. CALFED's plan is the result of 4 years of extraordinary cooperative efforts among State and federal agencies and stakeholder groups.The Final EIS/EIR is expected to be implemented June 2000. The plan is expected to cost $10 billion and take 30 years to complete.

- The Delta Cross Channel gates were closed on November 26, 1999, to protect emigrating juvenile salmon from straying into the interior Delta. The Delta Cross Channel gate closure, coupled with high exports and low Delta outflow conditions, resulted in increased salinity in the interior Delta. By December 6, interior Delta salinity reached the recommended level for opening the gates in the Spring-run Salmon Protection Plan; on December 8 the CALFED Operations Group met to review the recommended actions. On December 10, with the gates still closed, the State Water Project and Central Valley Project reduced exports and SWP releases to the Feather River were increased to help improve Delta water quality. Exports were reduced again on December 13. The gates were opened on December 14 and remained open through the end of December 1999; however, the chloride level at the Rock Slough intake continued to rise and exceeded the standard, averaging 258 mg/L on December 20.

- On December 29, 1999, the State Water Resources Control Board adopted the Final EIR and Decision 1641 implementing the water quality objectives of the San Francisco/Sacramento-San Joaquin Delta Estuary and approving the petition to add points of diversion to the SWP and CVP. D-1641 replaces Decision 1485 as modified by Water Right Order 98-9 and conditions the water rights permits of the SWP and CVP to implement the objectives of State Water Resources Control Board's Bay-Delta Water Quality Control Plan. D-1641 covers Phases 1-7 of the Bay-Delta Water Rights Hearings, leaving Phase 8, the allocation of responsibility for meeting the Delta outflow objectives, to be considered in year 2000 or early 2001.

Many Californians rely on the State Water Project for part or all of their daily residential water needs. Water for agriculture, industry, power generation, recreation, and fish and wildlife is also provided by 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 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 D-1485, as amended by Water Right Order 95-6, and subsequently by WR 98-9, 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

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. Water Rights Order 98-9, adopted by the SWRCB on December 3, 1998, extended the terms and conditions of WR 95-6 to allow time for the issuance of a comprehensive Water Rights Decision.

On December 29, 1999, SWRCB issued Decision 1641, replacing D-1485, and conditioning the water right permits of the SWP and CVP to implement the objectives of the Bay/Delta Water Quality Control Plan. D-1641 covers Phases 1-7 of the Bay/Delta Water Rights Hearings. Phase 8, the permanent allocation of responsibility to meet the Delta outflow objectives now temporarily assigned to the Department and USBR, is still under consideration.

SWRCB's D-1485, and the SWP and CVP 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 to the environment.

In December 1997, CALFED extended the Bay-Delta Accord for 1 year, and again in 1998 to allow CALFED time to continue working on a long-term plan. 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. It was set to expire upon either adoption by SWRCB of a comprehensive water rights decision allocating final responsibilities for meeting the 1995 Bay-Delta objectives or on December 31, 1999, whichever came first. SWRCB held several public water rights hearings during 1999 as part of its comprehensive Bay-Delta water rights process to consider alternatives for implementation of the 1995 water plan and consider impacts of and responsibility for meeting the objectives. On December 29, 1999, SWRCB adopted D-1641 to replace D-1485, as modified by WR 98-9.

In addition to extending the terms and conditions of WR 95-6, 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 U.S. Bureau of Reclamation 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's WR 98-9 extended the final reporting date to June 1, 1999. Prior to adopting WR 98-9, 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 the SWP and CVP water supply. Thus, the Accord allows for some operational flexibility through the deliberations of the CALFED Operations Group. Both the SWP and CVP 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.

SWRCB's issuance of D-1641 is part of their implementation of the 1995 Bay-Delta Water Quality Control Plan and accordingly this decision amends certain water rights of the water rights holders to help achieve the plan's objectives. While Phase 8, the allocation of responsibility to meet the Delta outflow objectives of D-1641, is still under consideration, the following amendments are included in the decision:

- The decision expands upon the responsibilities of the Department and USBR, including some objectives that were not included in the two previous limited term orders. These additional objectives involve southern Delta agricultural salinity standards that were listed in the 1995 Bay-Delta Water Quality Control Plan, but prior to D-1641 no water rights holder had responsibility under a water right permit to meet these salinity objectives.
- In contrast to the above expansion of responsibilities, the decision relieves the Department and USBR of the responsibility of meeting salinity objectives at two locations in the western Suisun Marsh: Morrow Island (S-35) and Ibis Club (S-97). D-1641 further allows some variability in meeting the remaining Suisun Marsh salinity objectives.
- The decision also approves a joint petition of the Department and USBR to change points of diversion of the SWP and CVP in the southern Delta. The decision further approves a USBR petition to change CVP places and purposes of use.

D-1641 also approves the San Joaquin River Agreement for a period of 11 years. The SJRA facilitates the implementation of the Vernalis Adaptive Management Program that is designed to gather information on the effects of exports and San Joaquin River flows on the survival of San Joaquin fall-run chinook salmon.

The balance of the permit amendments in the decision involves the recognition of various memorandums of understanding, stipulations, and agreements among various groups, including the Department, that seek to resolve questions of responsibility for meeting the water quality objectives contained within the Water Quality Control Plan.

The Department conducts extensive monitoring to protect beneficial uses of water in the Delta and Suisun Marsh as required by SWRCB's D-1485, and subsequent D-1641. 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 1998-99 water year was classified as *wet* or *above normal* for most of California, and it was Northern California's fifth wet year in succession, a phenomenom that is unprecedented in the records of the twentieth century. (For a detailed discussion of the 1998-99 water year, see Chapter 8.)

SWRCB's 1995 Bay-Delta Plan contains water quality 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*, *below normal*, *dry*, and *critical*.

The Bay-Delta Plan applies a water supply forecast tool, called the Sacramento Valley 40-30-30 Index, to replace the Sacramento River Index. SWRCB first introduced the Sacramento Valley 40-30-30 Index in its 1991 Water Quality Control Plan for Salinity. The Bay-Delta Plan proposes to further refine the Sacramento Valley 40-30-30 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 factors used in the Sacramento Valley 40-30-30 Index are the following: (1) the contribution of the current year's April through July Sacramento Valley unimpaired runoff (40 percent), (2) projected current October through March Sacramento Valley unimpaired runoff (30 percent), and (3) the previous year's Sacramento Valley 40-30-30 Index (30 percent, with a 10-million-acre-feet capacity limit).

The 1995 Bay-Delta Plan also includes a water supply forecast tool called the San Joaquin Valley 60-20-20 Index, which uses methods similar to the Sacramento Valley 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 through July Sacramento Valley unimpaired runoff forecast for May 1, 1999, was 7.92 million acre-feet (120 percent of average). The resulting Sacramento Valley 40-30-30 Index was 10 million acre-feet (a 25 percent decrease over the Sacramento Valley 40-30-30 Index of 13.31 million acre-feet in 1997-98). The water year was classified as *wet* for all beneficial uses. The San Joaquin Valley 60-20-20 Index was classified as *above normal* for 1999 at 3.5 million acre-feet. The Eight River Index forecast was 11.6 million acre-feet for April through 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, 1995 Bay-Delta Plan, and WR 95-6 that brought D-1485 and Decision 1422 into conformance with the Accord, and WR 98-9 that extended the

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

terms and conditions of WR 95-6 through the end of 1999. The Accord established water quality, flow, and operational criteria for the estuary. Operations of the SWP and CVP were to be guided by the CALFED Operations Group through coordination with the Central Valley Project Improvement Act and California Endangered Species Act requirements. The CALFED Operations 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 Framework 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 pumping 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. These standards include municipal and industrial, agricultural, and fish and wildlife. 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 1999, the Delta Cross Channel gates were open for 193 days. The gates close during January whenever Delta outflow is greater than 12,000 cfs—and any time Sacramento River flow at Freeport exceeds 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 the spawning season for Delta smelt, longfin smelt, Sacramento splittail, and striped bass.

The gates were closed the entire month of January, due to Delta outflow exceeding 12,000 cfs, and remained closed into early June. On June 3, the gates were opened for an uninterrupted period of 176 days, closing on November 26 to prevent outmigrating chinook salmon from straying into the interior Delta. The gate closure occurred at a period of low Delta inflow and high exports in the southern Delta, which caused a salinity increase in Delta water. Salinity levels continued to rise to a level at which opening the Delta Cross Channel gates is recommended in the Spring-run Salmon Plan of Protection. The SWRCB's municipal and industrial chloride standard of 250 mg/L was at risk of being exceeded at the Contra Costa Canal Intake near Rock Slough. The CALFED Operations Group met on December 8 to review the recommended actions. On December 10 the gates were still closed and, in response, the SWP and CVP reduced exports and boosted releases to the Sacramento River in an effort to reduce the salinity levels by improving Delta inflow. Exports were reduced again on December 13 and finally the gates were reopened on December 14. The gates remained open through the rest of the year; however, the chloride level at the Rock Slough intake continued to rise, exceeding the standard, and averaging 258 mg/L on December 20. Chloride levels at Rock Slough can be affected by the circulation of water resulting from exports at Contra Costa Water District's Pumping Plant Number One. The average monthly export rate fell by more than half from November to December 1999, allowing the chloride levels to recede to a daily average of about 200 mg/L by the end of December.

The year-round 250 mg/L chloride standard is also in effect at the other Delta export locations (Clifton Court Forebay, Tracy Pumping Plant, and Barker Slough) where the chloride levels remained below the standard throughout 1999.

There is an additional municipal and industrial water quality standard for chloride at the Contra Costa Canal Intake near Rock Slough that specifies the chloride level must be below 150 mg/L for a given number of days during the year. The wet year

requirement of 240 days was easily met during 1999, despite the period of concern reported above. 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.

Agricultural objectives in 1999 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. All of these agricultural salinity standards were met. An additional salinity standard was applied year-round in the southern Delta at Vernalis on the San Joaquin River as part of USBR's water rights permit under D-1422. The year-round Vernalis agricultural salinity standard of 1.0 mS/cm was met throughout 1999.

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 29,200 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. During 1999, the Eight River Index for January through May was 2.60 million acre-feet, 4.59 million acre-feet, 3.67 million acre-feet, 3.26 million acre-feet, and 4.27 million acre-feet, respectively. The Port Chicago 3-day average Net Delta Outflow Index standard of 29,200 cfs was met during February, March, April, and May. During the latter half of May, the 14-day EC average at Port Chicago rose above the 2.64 mS/cm standard, triggering the Chipps Island X2 objective for June. June easily met the X2 standard at Chipps Island, accruing 30 days of 14-day running mean of EC below 2.64 mS/cm.

From February through June, a wet-year habitat protection flow, measured as Net Delta Outflow, is set at 7,100 cfs and 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 NDOI never fell below 8,725 cfs and averaged almost 49,000 cfs for the period, easily meeting the 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 objective. All Rio Vista flow standards were met during 1999.

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. The Vernalis base-flow objective was met during 1999 with the X2 objective being located at Port Chicago during February through May, while June was under the less stringent Chipps Island objective.

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. During 1999, after last-minute challenges to USBR's implementation of its Anadromous Fish Restoration Program, the SWP and CVP began using the operational objectives in the Delta Smelt Biological Opinion as export targets during the spring pulse-flow period. As a result, the combined SWP/CVP export target was set at 3,500 cfs less than the San Joaquin River flow at Vernalis. Additional water was purchased from San Joaquin River tributaries to implement a spring pulse-flow target of 7,020 cfs at Vernalis. All Vernalis base and pulse flows were met during 1999.

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 1999. 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 1999, excess outflow conditions, as defined by the Coordinated Operation Agreement, predominated for the first half of the year. Excess conditions allow greater flexibility in project operations. Balanced conditions filled out the balance of 1999. From February 8 through March 10, 1999, the outflow, calculated as NDOI, averaged almost 121,000 cfs per day. By comparison, February 4, 1998, began a 25-day period average outflow of more than 256,000 cfs and within it, a 5-day period with an average flow of more than 311,000 cfs (February 7 to 10).

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. July's wet year NDOI standard is the strictest of all months at 8,000 cfs. Monthly NDOI was highest in March at 110,043 cfs. Monthly NDOI remained above 4,000 cfs during all months of 1999, with the lowest monthly mean in October at 4,095 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 averaged 14,774 cfs for the period. All NDOI standards were met in 1999.

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 allowed the SWP and CVP 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 through 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 through January, the export/inflow ratio rises to 65 percent.

During January 1999 combined SWP and CVP exports averaged only 13 percent of Delta inflow, well below the 65 percent objective, which was

partially due to a Delta fish survival test requiring a reduction in SWP exports until January 12. Exports during the more restrictive February to June period (35 percent objective) averaged only 16 percent. The highest daily combined export percentage for the period occurred on June 30, with 33.8 percent of the Delta inflow.

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; however, during the 1999 spring pulse-flow period the SWP and CVP, under guidance from the CALFED Ops Group, used a combined export standard derived from the Delta Smelt Biological Opinion and set at approximately 3,500 cfs less than the San Joaquin River flow at Vernalis. On May 13 the SWP and CVP began operation to achieve the export rates of VAMP, a combined export of 3,000 cfs through the end of the pulse-flow season on May 17, 1999.

SWP and CVP exports were increased to 4,000 cfs on May 18, following the end of the pulse-flow requirements. However, Delta smelt salvage rose to a yellow light concern level on May 19 and reached a red light concern level on May 20, triggering consultation with U.S. Fish and Wildlife Service. Exports were reduced to 3,000 cfs to reduce the smelt salvage, but high levels of Delta smelt salvage continued through May and June, leveling off in July.

From July to December 1999 (65 percent objective), the export/inflow ratio averaged 51 percent. Exports were curtailed during December to 34 percent of Delta inflow due to an increased salinity in the south Delta. Combined exports averaged only 8 percent of Delta inflow from December 14 to 20, as exports were reduced and SWP releases to the Feather River increased to improve Delta water quality.

Banks Pumping Plant pumped a total of 16,281 cfs of CVP water February 24 to 27, 1999.

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, it was extended for an additional 5 years in 1995.

The Department was unable to obtain a permit of entry from the Reclamation District for the installation of the spring Head of Old River barrier during April, and the spring barrier was, therefore, not installed in 1999. The Head of Old River barrier was not requested by DFG in fall 1999 (a wet year) because relatively high early fall San Joaquin River flows past Vernalis had the potential to cause erosion and overtopping concerns if the barrier was constructed. The high installation and removal costs associated with a short operational timeframe made construction of the barrier impractical. The Middle River, Grant Line Canal, and Old River near Tracy barriers were installed in mid-May and were operational by June 1.

The Grant Line Canal barrier's flapgates were tied open due to high salvage of Delta smelt at the export facilities. USFWS approved operation of the flapgates on July 23, 1999. The flapgates operated inadvertently from June 23 to July 12 due to a miscommunication within the Department. The Department notified USFWS of the error on July 30 and implemented new procedures to ensure that the error would not be repeated. The Grant Line Canal, Middle River, and Old River near Tracy barriers were all breached during the last week of September 1999.

Special Study and Biological Surveys

The Department monitors dissolved oxygen levels in the Stockton Ship Channel during late summer and

early fall of each year because low dissolved oxygen levels can occur due to low inflows and warm water temperatures. Low dissolved oxygen levels can cause physiological stress to fish and block migration of salmon up the San Joaquin River. The Department also surveys benthic organism density and diversity, phytoplankton biomass, and community composition in the Sacramento-San Joaquin Delta and Suisun and San Pablo Bays (the Bay-Delta system). These surveys are conducted as a result of the monitoring mandate of D-1641.

Fall Dissolved Oxygen Conditions in the Stockton Ship Channel

Historically, dissolved oxygen levels in the eastern Stockton Ship Channel have often dropped below 5.0 mg/L during late summer and early fall 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 downstream of Stockton. These low dissolved oxygen levels can cause physiological stress to fish and block upstream migration of salmon.

The Department usually closes the Head of Old River by installing a temporary rock barrier (the Old River closure) during periods of projected low fall outflow. The closure increases net flows in the San Joaquin River downstream of Stockton and helps alleviate dissolved oxygen concerns in the eastern channel. In 1999, however, the Department did not install the closure because water year 1999 was classified as wet, and San Joaquin River flows below Vernalis throughout late summer and early fall approached or exceeded 2,000 cfs. These relatively high flows, which could potentially cause erosion and overtopping concerns if the closure were constructed, were projected to be enough to minimize reverse flow conditions past Stockton.

Average San Joaquin River flows below Stockton ranged from -392 to +352 cfs from August through October and resulted in low river inflows into the eastern Stockton Ship Channel. These low inflows apparently contributed to a dissolved oxygen sag (an area where dissolved oxygen levels are 5.0 mg/L or less) throughout most of the monitoring period. The sag was present from the eastern end of Rough and Ready Island in the eastern channel to Fourteen Mile Slough in the central channel and extended west to Turner Cut in the central channel on October 25, 1999. Relatively warm water temperatures measured within the channel in August and early September (21 to 26 degrees C), high biochemical oxygen demand, and low inflows apparently contributed to the late summer and early fall dissolved oxygen sag in the central and eastern portions of the Stockton Ship Channel.

As in previous years, dissolved oxygen concentrations from Prisoner's Point to Disappointment Slough in the western channel were relatively high and stable throughout the study period. Dissolved oxygen values ranged from 7.7 to 10.0 mg/L during the August 10 to December 7 study period. The robustness of dissolved oxygen concentrations in the western channel is likely due to greater tidal mixing and the absence of conditions creating excessive biochemical oxygen demand in this portion of the channel.

Unlike previous years, dissolved oxygen concentrations did not recover to levels more than 6.0 mg/L in the central and eastern channels in late fall (November and December) despite slightly improved inflow conditions and markedly cooler water temperatures (10 to 14 degrees C). During this period, dredging, resuspension of sediments, and increased biochemical oxygen demand in the central channel were sufficient to offset recovery to the historical levels previously recorded.

Benthic Monitoring

The benthic monitoring program documents changes in the composition, abundance, density, and distribution of the benthic (bottom dwelling) biota within the Bay-Delta. Benthic biota are relatively long-lived and can respond to environmental changes such as fresh water inflows, salinity, and substrate composition. As a result, benthic data can provide an indication of physical changes occurring within the Bay-Delta. Because operation of the SWP can impact flow characteristics and subsequently influence the density and distribution of benthic biota, benthic monitoring is an important component of the Compliance Monitoring Program. Benthic monitoring

data are also used to detect and document the presence of newly introduced species.

Benthic monitoring is conducted at ten sampling sites representing the major habitat types within the system. Department staff collect four bottom grab samples and one sediment sample monthly at all sites. The grab samples are analyzed in the laboratory to identify organisms to genus (and to species when possible) and to determine the density of all organisms collected. Sediment samples are analyzed to determine substrate composition.

As a result of this environmentally diverse sampling, 11 new organisms were added to the benthic species list in 1999. The following species were collected at San Pablo Bay (a saline to brackish-water site west of the Delta):

- an isopod, *Caicidotea racovitzai*, in January
- a sea spider, *Achelia nudiuscula*, in September
- an amphipod, *Stenothoe valida*, in October
- the polychaete worms, *Amaeana occidentalis* and *Polydora socialis*, in October and November, respectively
- a copepod, *Pygodelphys sp*., in November
- an unidentified nudibranch, in November, and
- a basket cockle, *Clinocardium nuttallii*, in December

The following insect species were collected at the Sacramento River at Rio Vista (a fresh-water site in the western Delta):

- the riffle beetle, *Microcylloepus sp*., in February, and
- the dipteran *Bezzia sp*., in April

The oligochaete, *Kincaidiana freidris*, was collected in April at Rock Slough near Old River (a fresh-water site in the southern Delta).

Of the 160 species of benthic macrofauna collected in 1999, nine species represented approximately 89 percent of all organisms collected. These nine species include

- the amphipods, *Corophium stimpsoni, Corophium spinicorne, Ampelisca abdita*, and *Gammarus daiberi*
- the aquatic oligochaetes, *Varichaetadrilus angustipenis* and *Limnodrilus hoffmeisteri*
- the cumacean or fresh water crustacean, *Nippoleucon hinumensis*, and
- the Asian clams, *Potamocorbula amurensis* and *Corbicula fluminea*

Corophium stimpsoni and *Ampelisca abdita* each represented 16 percent of the total organisms collected and were the most abundant species collected in 1999.

Of the nine dominant species, *Ampelisca abdita* and *Potamocorbula amurenis* represent macrofauna that inhabit a more saline environment and were found in San Pablo Bay, Suisun Bay, and Grizzly Bay. *Nippoleucon hinumensis*, which tolerates a wider range of salinity, was collected in both the saline western sites and the brackish-to-fresh-water eastern sites—the San Joaquin River at Twitchell Island and the Sacramento River above Point Sacramento. The remaining six species are predominantly freshwater species and were collected at sites east of Suisun Bay.

Phytoplankton Monitoring

Average monthly chlorophyll *a* concentrations throughout much of the Bay-Delta system were low; 77 percent of the stations sampled in 1999 had levels below 4 mg/L (baseline levels). The maximum chlorophyll *a* concentration for most stations was reached during April or May, followed by another, smaller peak in late summer or early fall. The maximum chlorophyll *a* concentration of 36.6 mg/L was reached during mid-summer in the south Delta at Vernalis. This peak, well above the high of 22.1 mg/L recorded in 1998, occurred when water temperatures were high and fresh water inflows were low. Concentrations of chlorophyll *a* west of the Delta in Suisun and San Pablo Bays were low, only reaching a maximum of 3.16 mg/L. Low chlorophyll *a* concentrations in these bays could be a result of extensive filtration of the water column by the introduced Asian clam, *Potamocorbula amurensis*. Well-established benthic populations of *P. amurensis* in this region probably contributed, by grazing on phytoplankton and subsequently suppressing chlorophyll biomass, to the low chlorophyll *a* concentrations (and increased water clarity) measured in the bays since the mid-1980s.

Percent chlorophyll *a* is the proportion of chlorophyll *a* in total chlorophyll *a* and pheophytin *a* (a breakdown product of chlorophyll *a*) and is an indicator of phytoplankton activity. The percent of chlorophyll *a* concentrations in spring and early summer 1999 were well above 50 percent at all monitoring sites, indicating that plankton were growing well throughout the Bay-Delta system during this period.

Melosira granulata and *Cyclotella sp.* were the most common species in the mid-Delta region. *Cyclotella sp.* and miscellaneous flagellates were the most common species in the San Pablo region west of the Delta. *Melosira granulata, Cyclotella sp*., and *Skeletonema costatum* were the most common species present during the spring blooms throughout the Bay-Delta.

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, power plants, 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 (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's internet home page at 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 1999.

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 over 22 million people in California. Because the Delta is a relatively unprotected watershed, water quality degradation is possible from many sources, including industrial and municipal wastewater discharges, storm water runoff from cities, agricultural discharges, recreational activities, abandoned mines, 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 CCWD and the municipal water contractors of the SWP. Program advisors include representatives of participating

Table 4-1
1999 Mean Water Quality at Selected State Water Project Locations

Constituents	Units	Detection Limit	Thermalito Afterbay at Outlet to Feather River	North Bay Aqueduct Barker Slough Pumping Plant	Banks Pumping Plant	Delta-Mendota Canal Upstream of McCabe Rd.	California Aqueduct				Devil Canyon Afterbay near San Bernardino
							O'Neill Outlet (Check 13)	Kettleman City (Check 21)	Highway 119 (Check 29)	Tehachapi Afterbay (Check 41)	
Alkalinity	mg/L	1	38	104	64	67	72	72	74	80	71
Arsenic	mg/L	0.001	< 0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Boron	mg/L	0.1	< 0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Bromide	mg/L	0.01	0.01	0.05	0.18	0.18	0.19	0.18	0.18	0.17	0.14
Calcium	mg/L	1	8	16	17	18	18	18	19	19	18
Carbon-Total Organic	mg/L	0.1	NR	6.6	3.2	2.8	2.9 [a]	2.7 [b]	NR	3.4	2.6
Chloride	mg/L	1	1.0	22.0	54.6	53.1	57.8	56.8	57.2	52.1	45.3
Chromium	mg/L	0.005	< 0.005	0.008	0.006	< 0.006	0.006	0.006	0.006	0.006	0.006
Copper	mg/L	0.001	0.001	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002
Fluoride	mg/L	0.1	< 0.1	0.1	0.1	< 0.1	0.1	< 0.1	< 0.1	0.2	< 0.1
Hardness	mg/L	1	32	96	83	86	90	89	91	92	84
Iron	mg/L	0.005	0.005	0.027	0.015	0.017	0.014	0.028	0.011	0.011	< 0.005
Lead	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Magnesium	mg/L	1	3	14	10	10	11	11	11	11	9
Manganese	mg/L	0.005	0.016	0.016	0.014	0.018	0.008	0.006	< 0.005	< 0.005	0.133
Nitrate + Nitrite	mg/L	0.01	0.03	0.34 [a]	0.70	NR	NR	NR	NR	0.56	0.46
Phosphorus - Total	mg/L	0.01	< 0.01	0.09	0.06	NR	NR	NR	NR	0.07	0.07
Phosphorus - Ortho	mg/L	0.01	0.02	0.20	0.12	NR	NR	NR	NR	0.11	0.09
Selenium	mg/L	0.001	< 0.001	< 0.001	0.002	0.001	0.001	0.002	0.001	0.001	< 0.001
Sodium	mg/L	1	3	29	41	42	45	44	45	43	38
Specific Conductance	µS/cm	1	79	325	382	393	412	411	413	402	375
Sulfate	mg/L	1	2	25	33	34	36	36	37	34	32
Total Dissolved Solids	mg/L	1	53	187	214	221	226	224	224	217	203
Trihalomethane Formation Potential	µg/L	10	NR	665	401	349	389	363 [c]	360	351	363
Turbidity	NTU	1	3	72	17	17 [a]	9	7 [d]	12	18	4
Zinc	mg/L	0.005	< 0.010	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.008	0.006

Notes: All reported constituents are the yearly mean of laboratory analytical values sampled monthly. Nondetectable values were not used in the calculation of the yearly mean.
NR = No data recorded at this location.

[a] Mean based on only 11 months.

[b] Mean based on only 9 months.

[c] Mean based on only 5 months.

[d] Mean based on only 10 months.

agencies, including the EPA, 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 quality of drinking water in the Delta. Since then, the program has investigated ways of managing Delta lands and waters to minimize adverse impacts on drinking water quality. It has also 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 DHS, a 5-year update of the sanitary survey of the SWP was completed in 1996, resulting in the *California State Water Project Sanitary Survey Update Report 1996*. This survey documented water quality conditions and identified potential sources of contamination within the SWP and its watersheds. In addition, the report included recommendations for further investigations and corrective actions. Based on these recommendations, activities and investigations within the MWQI Program continue to address these water quality issues. Program staff began writing the 2001 sanitary survey update in fall 1999. This document will focus on recreation, pathogens, and dairy issues. It is scheduled for completion in early spring 2001.

The 1996 sanitary survey identified the North Bay Aqueduct/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 (microorganisms) contaminants, as well as high concentrations of organic carbon.

The North Bay Aqueduct/Barker Slough Watershed Study was started to investigate 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 *The North Bay Aqueduct Barker Slough Watershed Water Quality Phase I Report.* Phase II 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 where runoff is high during the wet season 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 applied for and received a SWRCB 305(J) grant to work with landowners in the watershed to address these loading issues. Phase III, which began in fall 1998, linked 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 was to create mass load calculations at three locations in the watershed. Results from this study have shown that the watershed loads large amounts of carbon during peak runoff periods into Barker Slough, and that the carbon is not easily flushed out of the system. A University of California, Davis investigation of the soils has shown that they contain high sodium, which leads to easier dispersion during runoff periods, creating high turbidity and carbon levels. Currently, the stakeholders are investigating the feasibility of best management practices to reduce carbon and turbidity in the slough. The MWQI Program will continue to work with the stakeholders to provide water quality technical assistance to the project.

In response to another recommendation of the 1996 sanitary survey report, the MWQI Program implemented a Coordinated Pathogen Monitoring program for the SWP and the Delta, in coordination with the Division of O&M and the Metropolitan Water District of Southern California. 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 using the EPA Information Collection Rule methodology. Additional work was conducted to evaluate the EPA Method ICR sampling and analysis methodology used for the study. Results from the 18-month sampling study and the methodology evaluation study were published in the 1997-98 MWQI annual report.

In fall 1999, the MWQI Program began assessing EPA method 1623, a new EPA-approved sampling methodology for protozoans. The study will continue into winter 2000.

Other components of the MWQI Program include

- installation and testing of new instrumentation to provide real time water quality data to describe Delta water quality in terms of concentrations, sources, and loads;
- evaluation of proposed CALFED restoration actions in terms of drinking water impacts;
- working with the California State and regional water quality control boards to develop drinking water policy as part of the basin plan; and
- investigation of new and increasing sources of pollution, including urban sources.

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, adjust to stricter State and federal regulations, and provide 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 needed to support the Department's water quality programs. Thousands of water samples are analyzed for minerals, nutrients, metals, pesticides, and other constituents. Bryte Chemical Laboratory continues to manage all analytical contracts with outside laboratories according to the master contract policy approved in fiscal year 1994-95. The laboratory continually works with the Quality Assurance/Quality Control Section to replace contracts that expire each fiscal year.

Analytical procedures and methods are continually updated and evaluated by the laboratory and several new methods are being added to the laboratory's list of available services. Solid-phase extraction for oil and grease EPA Method 1664 has been validated and is now routinely being performed. Several other solid-phase extraction methods are currently being evaluated for semi-volatile organic compounds, which include pesticides and herbicides. The new solid-phase extraction procedures will result in both time and cost savings for the laboratory. Bryte Chemical Laboratory is also in the process of adding EPA Method 218.6, an ion chromatography method that will be required for drinking water involving the analysis of chromium. This new method will be available January 1, 2001, and will allow chromium to be reported to 1 part per billion for all SWP-related programs.

The laboratory purchased several new analytical instrument systems during 1999 to modernize and expand its capabilities. A new automated Dionex Ion Chromatograph DX 500 system was purchased to combine several methods used to analyze fluoride, chloride, sulfate, nitrate, and bromide into one analytical method, EPA Method 300. This new system will save labor, time, and reagent costs. The laboratory also replaced an outdated Inductively Coupled Plasma Emission Spectrometer that was no longer cost effective. The new system is a Perkin Elmer ICP Optima 4300 DV. It is a fully automated computer-controlled system that can operate unattended overnight. The new system has lower detection limits,

faster analysis time, greater sample capacity and also has QA/QC functions built into its operating system software.

The Field and Laboratory Information Management System, implemented in 1997, has continued to enhance the laboratory's data management capabilities. This system simplifies the transfer process by allowing electronic transfer of samples for analysis to the laboratory. 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 system is designed to store all current analytical data, including all required QA/QC 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 electronic format.

Quality Assurance/Quality Control

The QA/QC 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.

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 submits performance evaluation samples to all in-house and contract laboratories to evaluate their performance;
- conducted a study evaluating the characterization of organic carbon by ultraviolet absorbance spectrophotometry;
- 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;
- continues using FLIMS at Bryte Laboratory; and
- enlisted California State University, Chico to begin development of the water quality module of the water data library; this database will house all of the electronic data from Bryte Laboratory and eventually all Department water quality data.

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.

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.

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 Term 10 of SWRCB D-1641, which applies to SWP and CVP operations. D-1641 was adopted by SWRCB on December 29, 1999. In 1987, the Department, USBR, DFG, and SRCD signed the Suisun Marsh Preservation Agreement (see sidebar below). SMPA contains provisions for actions to control channel water and soil salinity to mitigate impacts of the SWP, CVP, and other upstream diverters on managed wetlands in Suisun Marsh.

Suisun March Preservation Agreement Activities

In July 1995, USBR, DFG, SRCD and the Department began negotiations to amend the Suisun Marsh Preservation Agreement to reflect the current condition in the marsh. The parties agreed that: (1) the additional large-scale facilities proposed in the Plan of Protection are not necessary for salinity control in Suisun Marsh because of effectiveness of the Suisun Marsh Salinity Control Gates in conjunction with the additional outflows specified in the 1995 Bay-Delta Plan; and (2) supplemental actions are needed to better achieve the objectives of SMPA.

Amendment Three Actions. SMPA was amended in July 1995 to provide equal or better protection to Suisun Marsh-managed wetlands as intended under the original agreement and also to make channel water salinity standards consistent with SWRCB's 1995 Water Quality Control Plan. In addition, Amendment Three incorporates channel water salinity standards in the marsh similar to those under the original agreement and consistent with SWRCB's terms and conditions in the Department's and USBR's water rights permits for the SWP and CVP.

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 the Suisun Marsh Preservation Agreement. 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.

Proposed Amendment Three management actions include

- meeting channel water salinity standards in WR 95-6 (now D-1641);
- converting S-35 and S-97 from compliance stations to monitoring stations;
- setting criteria for September operation of the salinity control gates;
- implementing a water management program;
- updating existing management plans;
- implementing a joint-use facilities program;
- establishing managed wetland improvement cost-share funds;
- providing portable diversion pumps with fish screens;
- providing portable drainage pumps;
- realigning and stabilizing Roaring River distribution system turnouts; and
- establishing a drought response fund.

Environmental Review and Consultation Status. The following activities were completed in support of SMPA Amendment Three:

- informal ESA consultation completed with NMFS in 1998. Project description modified to include adult salmon passage study at SMSCG;
- DFG rendered draft biological opinion, June 1998;
- draft CEQA/NEPA document distributed for public comment, June 1998;
- final biological assessment submitted to USFWS, October 1999;
- consolidated formal ESA consultations for Amendment Three and the renewal of the SRCD/DFG regional general permit for maintenance activities. The permit is required for implementing Amendment Three actions; and
- USBR and U.S. Army Corps of Engineers jointly initiated formal ESA consultation, October 1999.

SMPA Environmental Coordination Advisory Team. The SMPA Environmental Coordination Advisory Team was convened to ensure compliance with conditions, mitigation, and monitoring responsibilities specified in SMPA. ECAT includes staff from the Department, USBR, DFG Grizzly Island, DFG Central Valley Bay-Delta Branch, and SRCD. USFWS, NMFS, and the Corps' staff have participated on ECAT in an advisory role. ECAT documents compliance with biological opinion measures and permit terms and provides reports to SMPA coordinators.

At ECAT's monthly meetings during 1999, discussions included SMPA Amendment Three and Section 7 consultation, Morrow Island fish screen alternatives, Suisun Marsh monitoring efforts, and property acquisition for tidal marsh restoration. Monitoring plans for the marshwide vegetation survey, Island Slough, and salt marsh harvest mouse were developed and approved through ECAT.

Individual Ownership Cost Share Program. The Individual Ownership Cost Share Program is a component of SMPA and is designed to assist individual landowners with water management on privately owned land within Suisun Marsh. The program includes replacing, lowering, and/or enlarging drainage structures and the purchase of 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.

Three applications for water management projects were submitted and paid for during 1999. The total cost of these improvements was $53,482, of which $40,111 was paid to SRCD and distributed to the landowners. The Department and USBR received and paid for seven additional 1999 applications. The Department and USBR have paid a total of $1,203,825 since the program began in 1987.

The Department and USBR added an additional $57,802 to the Individual Ownership Cost Share Program to account for inflation as specified in the original SMPA. SRCD anticipates that the remaining program funds will be exhausted by the time projects are completed October 2001.

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, SEW was formed to recommend salinity objectives to protect the beneficial uses of Suisun Marsh. Staff from SWRCB, SRCD, DFG, USBR, USFWS, and the Department have actively participated in the workgroup.

In 1996, SEW became a project work team under IEP. The purpose was to encourage other technical experts working on related topics in the estuary to provide input to SEW and to facilitate interagency review of SEW's work. SEW established a Web site to post meeting summaries, work plans, and products through IEP's Web site at iep.water.ca.gov/suisun_eco_workgroup/.

In 1999, SEW focused on completing its final report, which was reviewed by IEP. The final report will be submitted to SWRCB by January 2002. SWRCB plans to hold public meetings to receive comments on the final report following receipt of the report.

A draft final report is currently posted on the Web site and will be replaced by the final report after completion.

Modeling Support

Suisun Marsh Planning Support for the CALFED Levee Investigation Team

The CALFED Bay-Delta program established the Suisun Marsh Levee Investigation Team to gather information on the costs and benefits of including Suisun Marsh levees in the CALFED program, especially as they relate to CALFED water quality, water supply reliability, and Ecosystem Restoration Program goals. The Suisun Marsh Planning Section supported the team by using the Department's Delta Simulation Model 1 to evaluate hydrodynamics and salinity impacts of controlled and uncontrolled levee breaches in Suisun Marsh.

Suisun Marsh Planning Participation in the Project Work Team

The IEP Delta Simulation Model 2 Project Work Team is nearing completion of a multi agency cooperative effort to recalibrate the DSM2 model. Recalibration efforts began in August 1999. The project work team activities include

- collection of new Bay-Delta channel geometry data;
- collection of flow data at strategic Delta locations;
- model testing and sensitivity analysis;
- preparation of calibration protocols; and
- active participation in calibration activities among participants.

Geometry data is available to the public at www.iep.water.ca.gov/dsm2pwt/geometry/. Flow data is available at www.iep.water.ca.gov/dss/. Project work team participation in the calibration is facilitated by using www.iep.water.ca.gov/dsm2pwt. The Web site contains near real-time access to daily calibration run output and a facility for interactive comments on each calibration run.

Participants in the calibration effort include staff from the Department's ESO, DPLA, and O&M; USBR; USGS; University of California, Berkeley; Stanford University; CCWD; and MWD. The process is unique—a virtual interagency collaboration on calibration of a complex hydrodynamics and water quality model. The potential benefits include creating an accurate model and generating trust and understanding about the cooperative process. The team is working toward a September 2001 deadline for completion of the calibration.

Suisun Marsh Technical Advisory Committee

In 1999, Department staff facilitated four quarterly Suisun Marsh Technical Advisory Committee meetings. The quarterly meetings, which provide an overview of current activities in the marsh, were attended by representatives from federal, State, and local agencies. Since October 1999, the committee meeting agenda and minutes have been posted on the Internet at www.iep.water.ca.gov/suisun/.

Operation and Maintenance

Suisun Marsh Salinity Control Gates

The Suisun Marsh Salinity Control Gates are operated from October 1 through May 31, as needed to meet salinity standards; otherwise they are placed in an open position to minimize fish concerns related to predation and impedance. In the past, the gates'operation and installation or removal of the flashboards

has varied due to salinity conditions, fisheries agency requests for sensitive species concerns, or special studies and repairs.

The 1998-99 SWRCB Annual Report included discussion on the first half of the control season for the gates. Since marsh conditions were relatively fresh from November 13, 1998, through May 1999, minimal use of the gates during the second half of the control season was required. Although gate operations were not needed to control salinity during the second half of the control season, the modified flashboards were installed for data collection purposes until removal on April 7, 1999.

The gates were closed for several hours on February 3, 1999, to measure current velocity through preliminary flashboard modifications. The velocity test was conducted to determine a relationship between velocity and stage under tidal flow conditions through the modified flashboards for modeling and fish passage analysis.

From September 1 through November 9, 1999, the gates' operation was tailored to the adult salmon passage study conducted jointly by the Department, USBR, DFG, SRCD, and NMFS.

After completion of the 1999 fall fish passage study, the gates were operated from November 10, 1999, to December 31, 1999, to meet salinity standards as a good faith effort by the Department, despite SWRCB approval of a variance on the standards during the 3 years of fish passage tests. The gates were operated with the modified flashboards installed. This configuration was specified in the fish passage study, which also facilitated gathering more salinity data.

At the end of the fish passage test, mean high tide salinity conditions at all marsh compliance sites ranged from 16.0 to 17.0 mS/cm, eastern to western, respectively. The gates were operated to lower and control salinity throughout the marsh. Within 1 to 2 days, the gates'operations lowered mean high tide salinity at all eastern compliance sites (S-49, S-64, and C-2) by about 1 mS/cm per day and salinity dropped daily until the end of November. Operation of the gates also lowered mean high tide salinity at western marsh compliance sites (S-42 and S-21); however, the response time took about 3 to 5 days due to the sites' greater distance from the gates.

Morrow Island Distribution System Maintenance. In summer 1999, the Department completed the modifications of the Morrow Island Distribution

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.

System. The ditch levee road was widened and the wing-walls of the outfall straightened.

Planning, impact analysis, and permit acquisition for the installation of the MIDS intake fish screens continued in 1999. The fish screens, originally required by the biological opinion for the project, serve to protect sensitive fisheries in the area.

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 0.2 feet per second maximum approach velocity of USFWS fish screen criteria.

During summer 1999, maintenance was conducted on sections of the levees to restore the entire Roaring River levee system to the original design specifications. All the environmental clearances were obtained by June 1999. The contractor began work on July 14 and completed work on August 31; a Notice of Completion was sent to the regulatory agencies on September 13, 1999. Repairs consisted of

- installing geofoam at two levee sites;
- raising the levees to their original design heights;
- widening the levee roads to a constant width of 15 feet;
- placing aggregate base on most of the north and south levee roads; and
- placing rip-rap at erosion-prone banks.

Suisun Marsh Levees

Sunrise Club Levee Breach/Wave Wash Protection

A levee breach occurred at Sunrise Club (Club 405) during August 1999. The breach occurred along Frank Horan Slough on Club 405's southern levee and resulted in the complete flooding of Club 405 and exposure of the interior of levees to tidal action and wave erosion. The breach also affected tide and salinity conditions at compliance station S-21 through tidal damping. Station S-21, shown in Figure 4-2, is located on Chadbourne Slough just east of Club 405.

Monitoring

Comprehensive Review of Suisun Marsh Monitoring Data

The Suisun Marsh Preservation Agreement and the Suisun Marsh Monitoring Agreement were signed in 1987 and outlined a monitoring program for data collection in the Suisun Marsh. Monitoring was conducted from water years 1985 through 1995. These agreements also stipulated that the monitoring data and the effectiveness of the agreements were to be reviewed every 5 years. This review was not completed in 1992, and a comprehensive review of all the monitoring data began in 1996. The monitoring program included channel water salinity, water quality, and pond stage data from managed wetlands in the marsh, vegetation monitoring, and wildlife surveys. Review of the draft report was completed in 1999 and the final report is expected to be released in fall 2001.

Water Quality Monitoring and Compliance

Suisun Marsh channel water salinity standards were specified in SWRCB WR 98-9 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 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 on salinity levels at these locations. SWRCB D-1641, dated December 29, 1999, granted an exemption from the compliance monitoring requirement for these stations. Both remain active, however, as water salinity monitoring stations.

Salinity levels remained well within compliance during the period—October 1, 1998, through May 31, 1999—due mostly to sustained relatively high Delta outflow. See the Department's annual report to SWRCB, *Suisun Marsh Monitoring Program Data Summary: 1999 Water Year,* for details.

Water Quality Monitoring for the SMSCG Salmon Passage Study

Water quality monitoring efforts were conducted in fall 1999 to determine if dissolved oxygen and water

temperature conditions in Montezuma Slough could affect the movement of salmon in Montezuma Slough during the study period.

Salmon Tagging Crew Water Quality Monitoring. DFG and the Department's salmon-tagging field crews conducted water quality measurements at 3-hour intervals for about 14 hours per day on September 14 through 15, September 30 through October 2, and October 18 through 22, 1999. Crews measured dissolved oxygen, water temperature, and specific conductance.

Results from this portion of the study are anticipated in February 2001.

Water Quality Profiling. Water-quality profiling was conducted along Montezuma Slough on September 24, October 4, and October 20, 1999. Each profiling session coincided with an individual study/gate operation phase.

Somewhat depressed dissolved oxygen concentrations were detected during the October 20, 1999, profiling session at several stations along the Grizzly Island Wildlife Area, downstream of the control gates. The cause of the depressed dissolved oxygen concentrations is unknown but may be related to the discharge of drainage water from managed wetlands into Montezuma Slough.

Continuous Water Quality Measurements at Monitoring and Compliance Stations S-71 and S-64. Measurements for specific electrical conductivity, temperature, and dissolved oxygen were taken at every 15-minute interval around-the-clock at Suisun Marsh monitoring station S-71 and compliance station S-64 during the 1999 study. The stations are located along Montezuma Slough, as shown in Figure 4-2.

Somewhat depressed dissolved oxygen concentrations were detected in Montezuma Slough at monitoring station S-71 while the YSI 6600 was deployed at the station. Depressed dissolved oxygen concentrations were also detected at monitoring station S-64 from about October 15, 1999, until the end of dissolved oxygen monitoring operations at the station on November 3, 1999.

Monitoring Station Maintenance, Repair, and Enhancements

Routine maintenance, repair, and enhancement activities for Suisun Marsh monitoring stations during water year 1998-99 included

- flushing of tide wells to remove accumulated sediments;
- clearing/trimming of encroaching vegetation;
- repairing and resetting of staff gauges;
- calibrating monitoring instruments;
- quality control and assurance of collected data;
- surveying the station elevation; and
- replacement of expanded probe floats with plastic floats to protect fish from possible ingestion hazards.

Additional routine activities included minor repairs to monitoring stations and monitoring equipment.

Nonroutine maintenance and repair activities included

- reinforcement and modification of walkway and building supports for station S-64 (National Steel);
- walkway reconstruction and partial removal of the stilling well at station S-97 (Ibis);
- stilling well repair at station C-2 (Collinsville);
- installation of a new data logger housing at station S-37 (Godfather II); and
- installation of new platform decking at station S-49 (Beldons Landing).

Other monitoring station maintenance-related efforts in the marsh included

- removal of inactive pond stage recording equipment and soil moisture sampling probes from the marsh; and
- removal of discontinued special stations S-20 (Hollywood), A-52 (Morrow Drain), A-60 (Mallard), and A-68 (Grizzly King Intake).

Vegetation Monitoring

Under SMPA, the Department and USBR are required to conduct a vegetation survey of the marsh every 3 years. In April 1999, a new vegetation methodology, developed by DFG, was recommended by

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

the SMPA Environmental Coordination Advisory Team and approved by SMPA coordinators. The accepted survey methodology, *The Vegetation Survey for the Suisun Marsh, A New Methodology*, includes documenting annual changes in preferred habitat for the salt marsh harvest mouse, and gathering vegetation data.

Aerial photos of the marsh were taken in June 1999. In July 1999, DFG began photo interpretation and GIS scanning and registration. Between August and October 1999, DFG conducted vegetation sampling at randomly selected vegetation plots throughout the marsh. A final report and vegetation map will be available by November 2000.

Salt Marsh Harvest Mouse Monitoring in Conservation Areas

To meet the permit requirements of the U.S. Fish and Wildlife Service Biological Opinion for the Suisun Marsh Plan of Protection, eight areas, totaling about 1,300 acres, have been set aside as salt marsh harvest mouse monitoring conservation areas. Approximately 400 acres of wetland, including 100 acres of salt marsh harvest mouse habitat, were constructed at Island Slough on Grizzly Island. In 1998, ECAT was formed to assure future compliance with permit and monitoring requirements. The regulatory agencies, the Corps and USFWS, regularly participated at the monthly ECAT meetings. In 1999, to meet the goal of 2,500 acres of salt marsh harvest mouse habitat, DFG proposed the addition of six new salt marsh harvest mouse conservation areas totaling approximately 1,400 acres. USFWS approval of the six new conservation areas is pending.

Regular monitoring of the salt marsh harvest mouse conservation areas began in 1998, when the eight original conservation areas were surveyed. During 1999, the following areas were surveyed: five of the original conservation areas; six proposed conservation areas; and the salt marsh harvest mouse habitat at Island Slough. Salt marsh harvest mice were found at all surveyed areas, often in very high numbers.

Suisun Marsh Waterfowl Feeding Ecology Study

The objective of the waterfowl feeding ecology study was to determine the food source for mallards, northern pintail, and green winged teal in Suisun Marsh. During winters 1997 and 1998, 223 feeding birds were collected and their esophagi removed for analysis. Mud core samples were also collected from feeding sites to assess availability of plant and invertebrate foods. In addition, hunters from public and private areas of the marsh contributed over 750 esophagi for the study.

The samples are being analyzed at U.C. Davis laboratory. More than 500 esophagi have been sorted, dried, weighed, and analyzed. A final report including all samples is expected by spring 2001.

Aquatic Monitoring

During 1998, the Department contracted with University of California at 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 gates and the NMFS 1993 Biological Opinion for Operation of the SWP and CVP.

The U.C. Davis fish sampling and DFG juvenile striped bass sampling have not led to definitive findings on the gates' impacts, since the control or background condition for an assessment (the absence of gates) no longer exists. The data analyses addressed the question indirectly by comparing data collected before and after 1988. Because the overall decline in Suisun Marsh fish abundance began before installation of the gates, the decline seems independent of gate operation.

U.C. Davis has sampled for fish in Suisun Marsh since 1979, with Department and USBR funding. During 1999, sampling continued as in previous years, with larval sampling ending about 5 weeks early due to Delta smelt take restrictions. Results from 1999 sampling indicate that population levels continue to fluctuate at lower levels compared to the early 1980s. Since 1988, introduced species have dominated the fisheries. In 1999, Delta smelt and longfin smelt numbers were the highest since 1984 and 1982, respectively. The presence of eggs and larvae of Delta smelt and longfin smelt indicates that these species used the marsh for rearing and possibly

spawning in 1994 through 1999. Splittail larva were only captured in 1995, 1996, and 1998.

Since the late 1970s, DFG has monitored *Neomysis mercedis* densities and chlorophyll *a* concentration, an indicator of phytoplankton abundance, in the marsh. In 1998, *N. mercedis* samples were collected each month, although chlorophyll *a* samples were not collected until May of that year. *N. mercedis* has declined in Suisun Marsh since the 1970s, with the most dramatic decreases evident after 1991. Densities of *N. mercedis* were low throughout 1998. 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. Chlorophyll *a* concentrations increased somewhat in 1998 compared to levels measured in 1996 and 1997. Construction and operation of the control gates does not appear to have caused a decrease in chlorophyll *a* levels. Results from 1999 sampling will be available in late 2000.

DFG researchers also conduct sampling for juvenile striped bass (defined as schools of fish with mean length from 17.8 mm to 38.1 mm) in Suisun Marsh. In 1998, abundance in Montezuma Slough was the second lowest measured to date. Since sampling began in 1959 a gradual decrease in the average abundance has been observed in the Delta and Montezuma Slough. Because 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 Modification Study

The flashboard modification study continued for the second year in fall 1999. The study is evaluating the effectiveness of the two 3-feet-by-68-feet horizontal slots in providing passage for adult salmon and determined the effect of the slots on salinities in the marsh.

From September 1 through November 9, 1999, the gates'operation was tailored to the adult salmon passage study conducted jointly by the Department, USBR, DFG, SRCD, and NMFS. The operations were timed to coincide with the release of tagged adult salmon during three different phases:

- September 1 through 26, 1999, Phase I: gates operating tidally and modified flashboards installed
- September 27 through October 14, 1999, Phase II: gates operating tidally and original flashboards installed
- October 15 through November 9, 1999, Phase III: all three gates held open and flashboards removed from the main channel

Results from the 1998 and 1999 study periods are still being analyzed by the control gates steering group. Preliminary results indicate that the slots are not improving adult salmon passage and may, in fact, be hindering it. A report discussing the analyses of 1993, 1994, 1998, and 1999 data and any recommendations for future studies is expected in February 2001.

Morrow Island Distribution System

The Department has fulfilled the following permit conditions required for the Morrow Island Distribution System:

- trapping and relocation of salt marsh harvest mice from the project's impact zones to DFG land
- purchase, development, management, and monitoring of 57 acres of salt marsh harvest mouse habitat (seasonal wetlands)
- the restoration of the impact zones in seasonal wetlands and the distribution ditches
- replacement of habitat associated with the live eucalyptus trees removed from the north levee of the system during the ditch dredging

Trapping and relocation of salt marsh harvest mice was completed in 1997, the first project year. Fifty-seven acres of mitigation land were delineated from previously purchased lands at Island Slough near Grizzly Island in 1997-98. A management and monitoring plan for the mitigation area has been

developed and restoration was initiated in 1999. The south levee waterside slopes were seeded with natives in 1998, and although the slopes have revegetated, little of the native seed has thrived. The spoil areas (impacted seasonal wetlands) are returning to their pre-project condition; pickleweed and other associated brackish-water plants are established, but the desired ground cover has not yet been obtained.

Salt Marsh Harvest Mouse Habitat Restoration

On April 13, 1999, the Suisun Marsh ECAT team agreed that the 57-acre mitigation site for MIDS would be placed on DFG's Island Slough unit of the Grizzly Island wildlife area. The mitigation development, management, and monitoring plan for 57 acres at Island Slough has been developed and is being implemented.

The construction (water control structures and levee coring) of the project began in spring 1999. The property improvements, which are expected to be completed in spring 2000, will allow water management for the salt marsh harvest mouse to function independently from the waterfowl management areas.

The completion date for this mitigation site is estimated for summer 2004.

Morrow Island Distribution System Fish Screen and Alternatives

On July 2, 1997, the Corps issued permit No. 20698N to perform maintenance on MIDS. Permit conditions required installation of a fish screen on the Goodyear Slough diversion structure. In early 1999, the Department began development of design alternatives for the fish screen. Design alternatives were presented and discussed at SMPA-ECAT meetings. In consultation with USFWS and the Corps, the Department and USBR developed a hybrid proposal for meeting the permit condition. The proposal consists of the following:

- installation of two 12-foot conical screens and one 48-inch drain at the MIDS intake facility
- installation of five 12-foot conical screens distributed along Goodyear and Suisun Sloughs
- addition of one 36-inch turnout along C-line
- addition of one 36-inch combination turnout and one drain along M-line
- new operations agreement for MIDS

Reports

In 1999, the following reports on Suisun Marsh were written or published.

- *The Annual Data Summary Reports* for water year 1996-97 were published in December 1999. The reports include data from water quality monitoring stations, salt marsh harvest mouse surveys, waterfowl surveys conducted in the marsh, and a discussion of maintenance activities in the marsh.

- Starting in water year 1996-97, the report was revised by placing the background information in a separate document, *Suisun Marsh Monitoring Program Reference Guide*. The *Reference Guide* provides comprehensive information on the Department's Suisun Marsh monitoring program. The *Annual Data Summary Report* and *Reference Guide* are available online at iep.water.ca.gov/suisun/curr-report/, or by request.

  The Suisun Marsh Salinity Control Gates Fisheries Monitoring Annual Reports. Reports covering water years 1995-96 and 1996-97 were completed in August and November 1999, respectively. In lieu of a 1998 report, data from water year 1997-98 were incorporated into the aquatic resources chapter of *The Comprehensive Review of Suisun Marsh Monitoring Data,* expected to be released in late 2000.

- *SEW Final Report.* The *SEW Final Report* includes recommendations for water quality objectives to improve conditions for beneficial uses in Suisun Marsh. Additionally, the workgroup prepared a set of recommendations for future research and monitoring in the marsh.

The final report presents each subcommittees' set of recommendations. Ultimately SEW chose not to develop a single workgroup recommendation, due to the divergent views of the various subcommittees. The report contains recommendations for comprehensive monitoring and research needs for Suisun Marsh, which were also submitted to the CALFED Comprehensive Monitoring Assessment and Research Program.

The final report was reviewed by IEP; no comments were received. It is expected to be reviewed by SWRCB in January 2001.

- Biological Assessment for Amendment Three to SMPA. SMPA parties—the Department, USBR, DFG, and SRCD—prepared and forwarded a biological assessment for SMPA as modified by Amendment Three to USFWS in October 1999. This action completed the requirements for Section 7 consultation under FESA. Additional documentation was prepared by SRCD and DFG and forwarded to USFWS. USFWS was scheduled to complete consultation and issue a draft biological opinion in February 2000.

Suisun Marsh Expenditure History

Suisun Marsh expenditures and reimbursements administered by the Department for calendar years 1968 through December 1999 are summarized in Table 4-2. From 1968 through December 31, 1999, the Department disbursed more than $94.5 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 Suisun Marsh and SMPA and meeting standards set by SWRCB. USBR has reimbursed the Department about $35.5 million—37.6 percent—and the State's general fund has reimbursed about $9.5 million—10 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 up-front payments, USBR reimbursements, general fund reimbursements, and the Department's cumulative expenditure balance.

Table 4-2
Suisun Marsh Expenditures and Reimbursements
Administered by the Department
(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	2,721,213	647,138	0	35,151,839
1996	3,391,135	1,482,396	0	37,060,579
1997	3,631,829	1,520,219	0	39,172,188
1998	5,342,834	1,107,501	0	43,407,521
1999	8,792,037	2,696,200	0	49,503,358
Total	**94,519,441** [e]	**35,538,083** [e, f, g]	**$9,478,000** [h]	**49,503,358** [g]

[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 percent of departmental up-front payment through June 1988, amounting to $9,478,000. This payment includes $6,643,600 for the Department's recreation project purpose share of 14 percent.

[e] Does not include USBR up-front payments for staff and other direct costs.

[f] USBR has paid 37.6 percent of the total Department up-front payment.

[g] The Department has paid 52.4 percent of the total Department up-front payment.

[h] General fund has paid 10 percent of the total Department up-front 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

Adjusting the flow at an irrigation canal gate

Significant Events

- The San Joaquin Valley Drainage Implementation Program completed eight technical committee reports and three subarea reports evaluating status of drainage problems and identifying technical solution options.
- The Department's California Irrigation Management Information System was expanded to 106 weather stations in 1999 and current data is being put on an Internet site.

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 dams and reservoirs.

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 fee oversight function.

In this reporting period, the Davis-Grunsky Act Program funded one activity, described below.

Big Bear Municipal Water District

Phase II repairs of Bear Valley Dam, San Bernardino County, continued to await the 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. The district is progressing toward Phase II construction through a Request for Proposal for service to the spillway gates.

Water Use Efficiency

The Department's California Irrigation Management Information System was expanded to 106 weather stations in 1999 and current data is being put on an Internet site. The Department provides reference evapotranspiration information to several local agencies. There are more than 5,000 requests for information from the CIMIS database and Internet site each month.

The Department supported the development of a training program to certify urban water conservation specialists. The American Water Works Association's California-Nevada Section presented the first Water Conservation Practitioner classes and tests at Conserv '99 in January 1999. A growing number of agencies are requiring the certification as a prerequisite for hiring in the water conservation staff category.

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

San Joaquin Valley Drainage Implementation Program

The Department continues 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 and 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 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 as described below.

The first stage consisted of two concurrent, coordinated 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 synthesized the information from the first stage into a report and, based on technical and economic considerations, identified interactions and trade-offs among management options and developed a set of recommendations. The technical committee and subarea reports were completed in 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 destroying agricultural lands.

The SJVDIP Action Plan and the cooperative effort initiated among the parties are necessary to resolve drainage problems. The Department will continue to participate in this effort to assist the local districts, working with other agencies, and continues to 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 Department's DPLA Internet site (www.dpla.water.ca.gov).

Proposition 204

Proposition 204, *The Safe, Clean, Reliable Water Supply Act*, authorized the transfer of approximately $6 million from State Water Resources Control Board to DFA 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. This program is closely coordinated with SJVDIP.

Drainage Monitoring and Evaluation

The Department continues to

- participate in a cooperative information system program with the U.S. Bureau of Reclamation and the Central Valley Regional Water Quality Control Board. This program provides local, State, and federal agencies with flow and salinity projections to assist in managing drainage releases into the San Joaquin River. It operates under a 2-year grant from CALFED, which expires in 2001.
- monitor shallow groundwater levels and electrical conductivity data as well as collect drainage-water flow data and water quality data from about 30 tile drainage system sumps. Using this data in conjunction with land use data and irrigation methods data, the Department produced land use maps of the shallow groundwater areas and irrigation methods maps, in addition to the annual drainage report.

Drainage Treatment

The Department continues to investigate technologies to treat agricultural drainage water and agreed to participate in a pilot-scale desalting project at Buena Vista Water Storage District in Kern County. The project is a cooperative effort among Buena Vista Water Storage District, Boyle Engineering, University of California at Los Angeles, and the Department to develop information on pretreatment, reverse osmosis treatment, and brine disposal. Agreements

were written and plant operation is planned for the 2000 and 2001 irrigation seasons.

Other activities included support of a cooperative investigation into the use of wetlands for selenium removal at Tulare Lake Drainage District and investigations of processes for concentrating and purifying drainage salt for marketing purposes. The Department also provided support for an investigation at UCLA to develop systematic protocol to evaluate and rank potential nanofiltration and reverse osmosis membranes in the treatment of subsurface drainage water.

Lastly, draft summary operation reports and appendices were completed for the investigation at the multi-agency Adams Avenue Agricultural Drainage Research Center. The investigation involved selenium reduction/removal from drainage water using anaerobic sludge blanket reactors, fluidized bed reactors, a packed-bed reactor, and slow sand filters.

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 to reduce 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 growers' and irrigators' knowledge.

Staff is presently involved in two major activities:

- management of six in-progress contracts
- work on SJVDIP Activity Plan and Ad Hoc Coordination Committee

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 1999 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 Pre-irrigation 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 helped the SJVDIP coordinator execute the Activity Plan update of the 1990 SJVDIP Drainage Management Plan. Staff have participated in eight technical committees and contributed to the writing of the committees' reports. Final technical and subarea reports were completed in 1999 and work is continuing by the Ad Hoc Coordination

Committee to prepare a final report to SJVDIP by January 2000.

Evaporation Ponds

Operators of the agricultural evaporation ponds continue to function under the waste-discharge requirements adopted by the Central Valley Regional Water Quality Control Board in August 1994. Clean wetlands mitigation procedures 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. Research 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 years of implementation. CVRWQCB has reviewed these reports for adequacy and will prepare modifications to the waste-discharge requirements if needed.

During 1999, the Department continued to

- assist CVRWQCB in assessing the biological implications of any proposed modifications.
- fund and coordinate research on the evaporation ponds. A study by the Biological Resource Division to analyze shorebird-feeding behavior was completed and a final report was issued.
- study the Rainbow Ranch evaporation basin in Kern County. Based on studies that the Department and U.S. Fish and Wildlife Service conducted in the past, a relationship between waterborne 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 evaporation pond cells develop both thermal and salinity stratification. This stratification may be associated with the low levels of egg selenium. The relationship between egg selenium levels and the conditions that result in stratification has not yet been determined.

Other Activities

Department staff participated in a salt utilization committee and prepared a pamphlet on potential uses of drainage-generated salts. The Department continues experimental work at Red Rock Ranch, an Integrated on-Farm Drainage Management project. In 1999, a report called *Integrated Systems for Agricultural Drainage Management on Irrigated Farmland* was prepared and released to the public. The report presented the results of 4 years of research at the Red Rock Ranch.

The Department participated in three IFDM workshops, which were held at three locations within the San Joaquin Valley. The workshops were jointly organized by the Department and the Center for Irrigation Technology and included the preparation of an IFDM textbook for the workshops. Other activities included development of a proposal for CALFED funding for the utilization of farm-based salt and designing an IFDM system for the Rainbow Ranch to convert it from an evaporation basin to an IFDM operation.

Environmental Impact Documents Review

The Environmental Review section in DPLA screens State Clearinghouse documents and circulates SWP-related materials for review by the Department's four districts, as well as DPLA, the Department of Operations and Maintenance, and the Division of Engineering. In addition, other divisions and offices are notified of activities and are asked 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 1999, about 3,300 documents were screened by the Environmental Review section, with 398 referred for detailed review. O&M received 85 of these referrals. The State Water Project Analysis Office received 21 referrals, and the Office of State Water Project Planning received 3. In addition to formal referrals, 179 informal referrals were made to departmental staff, which were referred to staff for information rather than comment; however, some of them were for-

mally referred to other departmental staff for comment.

Of the documents submitted for formal review, about 12 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 have been made available by e-mail, increasing the report's availability and speed of distribution. About 80 requests from departmental staff during 1999 were related to the distribution of these reports. In addition, Environmental Review Section staff filled eight requests from two SWP contractors.

During 1999, the Environmental Review Section also tracked documents related to development along the California Aqueduct, water transfers and other supply issues, wastewater treatment, and fiber optic construction near SWP facilities.

Water Conservation Bond Laws

With the objective of assisting local agencies in obtaining financing for their water management programs, California voters approved four bond laws between 1984 and 1996 authorizing 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 of 1996 (Proposition 204) authorized $55 million for water conservation, groundwater recharge, and local water supply projects and authorized about $6 million for DFA for drainage reuse studies and programs. Since then, DFA requested the Department to administer the $6 million and conduct the necessary projects.

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
- water recycling distribution systems

Groundwater Recharge
- facilities for new artificial groundwater recharge
- 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
- 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, 1984-99
(Millions of Dollars)

Bond Law	*Type of Project*	*Number of Projects* [a]	*Funding* [a]
Clean Water Bond Law of 1984	Water Conservation	7	9.74
Water Conservation/Water Quality Bond Law of 1986	Water Conservation	23	38.62
	Groundwater Recharge	10	28.04
	Subtotal	*33*	*66.66*
Water Conservation Bond Law of 1988	Water Conservation	7	17.44
	Groundwater Recharge	8	24.30
	Local Water Supply	4	9.00
	Subtotal	*19*	*50.74*
Safe, Clean, Reliable Water Supply Act of 1996	Water Conservation	0	0.00
	Groundwater Recharge	4	20.00
	Local Water Supply	1	0.15
	Subtotal	*5*	*20.15*
Subtotals	All Water Conservation	37	65.80
	All Groundwater Recharge	22	72.34
	All Local Water Supply	5	9.15
Total	**All Projects**	**64**	**147.29**

[a] Construction project and feasibility study loan and grant commitments as of 12/31/99.

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

Chapter 6
Legislation and Litigation

Close-up of the west entrance to the Capitol

Significant Events

- **AB 1584 (Machado) Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act (Chapter 725, Statutes of 1999).** The Legislature passed AB 1584, a bond measure which was signed by the Governor and will be placed on the March 7, 2000, ballot as Proposition 13. If adopted, Proposition 13 will provide $1.97 billion in bonds to be used in the following manner: (1) Safe Drinking Water Program: $70 million; (2) Flood Protection: $292 million; (3) Watershed Protection Program: $468 million; (4) Clean Water and Water Recycling Account: $355 million; (5) Water Conservation Programs: $155 million; and (6) Water Supply, Reliability and Infrastructure Programs: $630 million.

The Department of Water Resources' Deputy 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

State Legislation

AB 1584 (Machado) Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act (Chapter 725, Statutes of 1999). The Legislature passed AB 1584, a bond measure which was signed by the Governor and will be placed on the March 7, 2000, ballot as Proposition 13. If adopted, Proposition 13 will provide $1.97 billion in bonds to be used in the following manner: (1) Safe Drinking Water Program: $70 million; (2) Flood Protection: $292 million; (3) Watershed Protection Program: $468 million; (4) Clean Water and Water Recycling Account: $355 million; (5) Water Conservation Programs: $155 million; and (6) Water Supply, Reliability and Infrastructure Programs: $630 million.

AB 1593 (Villaragiosa) Wild and Scenic Rivers: South Yuba River (Chapter 1017, Statutes of 1999). AB 1593 designates the South Yuba River as "wild and scenic" to be effective January 1, 2001. This is the companion bill to SB 496.

SB 496 (Sher) Wild and Scenic Rivers: South Yuba River (Chapter 1016, Statutes of 1999). SB 496 adds the South Yuba River to the State's wild and scenic rivers system. AB 1593 is the companion bill, which delays designation of the South Yuba River for 1 year.

SB 970 (Costa) Water Rights (Chapter 938, Statutes of 1999). SB 970 enacts the Water Rights Protection and Expedited Short-term Water Transfer Act of 1999 to streamline the administrative process for approval or denial of water transfers by the State Water Resources Control Board; requires general public notice of water transfers.

SB 1062 (Poochigian) *The California Water Plan* (Chapter 210, Statutes of 1999). SB 1062 codifies the Department's current practice of establishing an advisory committee to update Bulletin 160 (*The California Water Plan)* and requires the Bulletin 160 process to include discussions of potential advantages and disadvantages of various water supply strategies.

SB 1107 (Sher) Operator Certification: Water Distribution Systems (Chapter 755, Statutes of 1999). SB 1107 requires the Department of Health Services to set forth a program that examines and certifies supervisors and operators of water distribution systems, including the Department's small water treatment plants.

Federal Legislation

S 507 (J. Warner) Water Resources Development Act of 1999, Public Law 106-53. S 507 authorizes future federal appropriations for a variety of water resource projects, including several flood control and watershed projects in California.

HR 4060 (McDade) Energy and Water Development Appropriations, 1999 Public Law 105-245. HR 4060 appropriates monies for energy and water development purposes, including CALFED activities at $75 million.

Litigation

As of December 31, 1999, 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 CVPIA. The water districts claim that the administrative proposal fails to account for the water as required by CVPIA and is subject to the National Environmental Policy Act. In contrast, environmental groups also filed a lawsuit against the U.S., claiming that the proposal fails to properly account for the water, 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 and, in November 1998, plaintiffs submitted motions for partial summary judgement in preparation for a January 1999 hearing.

On March 19, 1999, the federal district court issued a Memorandum Opinion for partial summary judgement finding that the administrative proposal was contrary to CVPIA. Plaintiffs sought a preliminary injunction to prevent the U.S. Bureau of Reclamation from implementing (b)(2) measures. In December 1999, the federal district court issued an order regarding the preliminary injunction request, concluding that additional evidence was necessary to determine if DOI had complied with CVPIA. The court appointed an expert witness to present testimony in early 2000, after which it is expected to issue an order on the preliminary injunction request.

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 the California Environmental Quality Act 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 KWB. On August 15, 1996, judgement 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 mitigated negative declaration was adequate. 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 judgement. No order for stay (to prevent work from proceeding) was filed, and construction at Silverwood Lake 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, upon 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 Lake. The original mitigation plan included three primary mitigation measures: (1) fish macro and micro habitat enhancement; (2) fish population studies through 2001; and (3) a one-time fish stocking if the fishery has not recovered by the end of 2001. In January 1999, the Department filed a mitigation status report, which was approved by the court. The Department implemented the mitigation plan during 1999.

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

Chapter 7

Storage and Delivery Capabilities and Water Supply Development

Overview of Pyramid Lake downstream of the dam, with Interstate 5 in the background

Significant Events

- CALFED released its Draft Programmatic Environmental Impact Statement/Environmental Impact Report for the Bay-Delta Program.
- Investigations and feasibility studies were started for the CALFED Integrated Storage Investigations Program.
- The State Water Resources Control Board completed Phases 1 through 7 of the Bay-Delta Hearings and issued Water Right Decision 1641 in the matters of: *Implementation of the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*; *A Petition to Change Points of Diversion of the Central Valley Project and State Water Project in the Southern Delta*; and *A Petition to Change Places of Use and Purposes of Use of the Central Valley Project*.
- Department staff assisted SWRCB in the publication of *A Guide to Water Transfers* (July 1999 draft).

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 planning and developing new facilities. Many environmental concerns center on the effects that additional storage and delivery facilities may have on the water quality and the 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 the solutions currently being outlined by CALFED.

Through 1999, the CALFED Bay-Delta Program continued a comprehensive, long-term solution for the Delta. This 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.

In June 1999, CALFED released its multivolume Draft PEIS/EIR for the Bay-Delta Program. The plan proposes strategies for improvements in four interrelated problem areas: ecosystem health, water quality, levee system integrity, and water supply reliability. It is comprised of near-term actions and studies and sets the groundwork for actions in the future. The release of the Draft PEIS/EIR marked a milestone for the CALFED agencies. Work continues on completion of a Final PEIS/EIR, which will lead to implementation of numerous programs and projects.

The Department has vigorously supported this effort, seeing it as a means of developing and managing the State's water resources to benefit the public and the environment, as well as to meet the water delivery commitments of the SWP. The Department is also developing a planning strategy for the SWP to lay 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.

Supply Reliability Activities

Increased emphasis has been given to maintaining and improving the reliability of future SWP supplies—the core of SWP planning activities.

Water Supply Contract Evaluation

Evaluation of existing SWP water supply contracts and project operations is a continuing activity aimed at improving reliability.

Transfer and Exchange Evaluations

Evaluation of the effects of proposed non-SWP water transfers on the SWP continues, in cooperation with

the State Water Project Analysis Office, Division of Operations and Maintenance, and the Office of the Chief Counsel. This team develops formal responses to specific issues, projects, or programs. Coordination of this effort by the Office of State Water Project Planning ensures timely identification and evaluation of significant projects. The team identifies and evaluates water transfer proposals, water acquisitions by the U.S. Bureau of Reclamation and other water agencies, and proposes water-right settlement agreements for potential impact on the SWP. Emphasis on early intervention tailors the proposals to minimize adverse effects or maximize benefits to the SWP. The team is monitoring the USBR contract renewal process to evaluate potential impact. These activities help the Department understand the potential cumulative impact of other agencies' actions on the SWP and to proactively address those actions.

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

Watershed Management

This continuing effort evaluates the state of the Feather River watershed above Lake Oroville and identifies actions that can be taken within the watershed to increase base-flow runoff and reduce sedimentation. The initial effort explored ways to improve local water supplies without adversely affecting SWP supply or operations. Early activities included installing monitoring equipment and gathering pertinent data on streamflows, water quality, erosion, and land use. This data will be used to formulate reports and studies for future actions. The work continues to receive strong local support.

SWP Bay-Delta Proceedings—1999 Activities

Over the past 30 years, SWRCB has received and reviewed copious amounts of testimony and evidence to establish water quality objectives for the Bay-Delta estuary to protect urban, agricultural, and fish and wildlife water uses. The current water quality objectives are set forth in the 1995 Bay-Delta Plan, which is designed to 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, and combined use of the SWP and Central Valley Project points of diversion in the Delta.

The current series of the Bay-Delta Water Right hearings address the implementation of the 1995 Bay-Delta Plan through a water-right hearing process staged in eight phases. The Bay-Delta hearings were held from July 1, 1998, through December 31, 1999. SWRCB heard 80 days of testimony, concluded Phases 1 through 7, and adopted the Final EIRs and Water Right Decision 1641 after considering the following petitions: *Implementation of the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*; *A Petition to Change Points of Diversion of the Central Valley Water Project and State Water Project in the Southern Delta*; and *A Petition to Change Places of Use and Purposes of Use of the Central Valley Project*.

Adopted on December 29, 1999, D-1641 addresses objectives to protect water quality and flow in the San Francisco Bay/Sacramento-San Joaquin Delta estuary. Highlights of D-1641 include

- continuation of the interim responsibility of the Department and USBR to meet the water quality objectives for Delta outflow until November 30, 2001, or the adoption of new decision, whichever comes first;
- approval of the joint petition of the Department and USBR to change points of diversion of the CVP and SWP in the south Delta;
- approval of the San Joaquin River Agreement/ Vernalis Adaptive Management Plan to provide information on the effects of flow and exports on the San Joaquin fall-run chinook salmon;
- removal from the Department and USBR of the responsibility to meet the objectives at two control stations in the western part of the Suisun Marsh;

- recognition of the contract between the Department and the North Delta Water Agency to assure a dependable water supply of suitable quality; and
- recognition of Cache and Putah Creeks' stipulations that relieves those water right holders from obligation to implement the objectives set out in the 1995 Bay-Delta Plan.

The following is a summary of each phase of the hearings.

In **Phase 1**, SWRCB extended Water Right Order 95-6 after hearing testimony, and renamed it Water Right Order 98-9. This order modifies SWP and CVP rights described in Decision 1485 to make them consistent with the 1995 Bay-Delta Plan.

Phases 2, 2a, and 2b addressed the responsibility of the parties who jointly proposed the San Joaquin River Agreement. They will make available the water required as set out in the agreement. In return, the Department and USBR will compensate them by assuming responsibility for the 1995 WQCP objectives for the San Joaquin River Basin share of Delta outflow.

Phase 3 addressed the Suisun Marsh Preservation Agreement and other alternatives for meeting the Suisun Marsh objectives.

Phase 4 addressed the responsibilities of parties who jointly proposed agreements in the Mokelumne River, Putah Creek, Cache Creek, and north Delta. The Department supported each of these agreements.

Phase 5 addressed responsibilities for meeting agricultural and dissolved oxygen objectives for the San Joaquin River near the City of Stockton. To help meet their obligations, the Department proposed the Interim South Delta Program to improve water circulation and water levels in the south Delta.

Phase 6 dealt with the petition filed by the Department and USBR to authorize joint points of diversion by CVP and the SWP. Under D-1641, SWRCB approved the SWP's Banks Pumping Plant as a point of diversion and rediversion for USBR's water rights. They also approved CVP's Tracy Pumping Plant as a point of diversion and rediversion for the Department's water rights.

Phase 7 dealt with the petition filed by USBR to change and consolidate places and purposes of water use delineated in certain permits of CVP.

Phase 8 has not yet begun, but will address the responsibility of diverters upstream of the Delta who have not agreed to their role in meeting the 1995 WQCP. Phase 8 is expected to be controversial. Potential solutions discussed in the EIR to allocate this responsibility include the present situation in which only the SWP and CVP are obligated to meet the Delta objectives, and other alternatives that shift some of the obligation to other upstream water rights holders.

Water Supply Development

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

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;
- using SWP funds to develop local water supplies; and
- investigating and evaluating storage projects.

State Water Project Conveyance

The Department arranges for the temporary transfer of water through SWP facilities for the SWP long-term contractors, as well as for other agencies. These transfers can occur in three different ways: (1) water exchanges either among the SWP long-term contractors or among contractors and non-SWP contracting entities; (2) entitlement water transfers among long-term SWP contractors; or (3) transfers of nonproject water to the non-SWP and the SWP agencies.

CALFED Bay-Delta Program—Water Transfer Program

The Department actively participated 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 proposed a framework of actions, policies, and processes to facilitate water transfers and further

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.

develop a statewide water transfer market. The program document describes the relationship of water transfers to other water management actions and programs, discusses existing laws and statutes, such as Water Code Section 1810 *et seq.,* and identifies issues and problems related to transfers. The document also makes recommendations to resolve these issues and suggests strategies to implement these recommendations. In June 1999, CALFED released its Draft PEIS/EIR. The Water Transfer Program is one of eight program elements developed for the programmatic EIR/EIS. As part of the Water Transfer Work Group, Department staff, along with other agencies, assisted SWRCB in the formulation and publication of *A Guide to Water Transfers* (July 1999 draft). It was produced to help people understand the process and provide information needed to complete water transfers and to help foster voluntary transfers of water through a better understanding of the California Water Code and the existing regulations governing water transfers. Although all parties who reviewed this document did not agree on every conclusion and discussion in the guide, they encouraged its publication in order to provide a resource for information.

CALFED Bay-Delta Program—In-Delta and Off-Aqueduct Storage Element of the Integrated Storage Investigation Program

OSWPP and Division of Planning and Local Assistance are assisting CALFED with ISI. CALFED initiated ISI as part of its ongoing evaluation of the appropriate role of storage alternatives in the CALFED solution. ISI will evaluate surface storage, groundwater storage, power facility reoperation, and the potential for conjunctive-use operations. ISI will also identify and evaluate barriers to fish passage that may be modified or removed. One element of ISI's surface storage investigations is the In-Delta and Off-Aqueduct Storage Study.

The In-Delta and Off-Aqueduct Storage Study will evaluate five reservoir sites (shown in Table 7-1), some of which are storage islands in the Delta and surface storage reservoirs adjacent to the State and federal aqueducts south of the Delta.

Table 7-1
Potential Reservoir Sites for In-Delta and Off-Aqueduct Storage

Project/Location	*Type of Reservior*	*Gross Storage Capacity (TAF)*
In-Delta		
In-Delta Storage Project/San Joaquin County	Island storage in the Delta	230
Off-Aqueduct – South of Delta		
Ingram Canyon Reservoir/ Stanislaus County	Off-stream storage	333 to 1,201
Los Vaqueros Enlargement/ Contra Costa County		Additional 965
Panoche Reservoir/San Benito and Fresno Counties		160 to 3,100
Quinto Creek Reservoir/Merced County		332 to 381

OSWPP will coordinate these evaluation studies and produce reports on the five sites. The reports will include the scope of each project, development of alternatives, operations studies, feasibility evaluation, environmental considerations, and water quality impacts. The resulting data will be incorporated into and become the basis of the reports. These reports will also include project descriptions, costs estimates, facilities description, and geologic investigations and findings. The facilities description will include layout of dams, embankments, levees, conveyance channels, siphons, and pumping-generating plants. Other issues that will be considered include power availability, road and utility relocations, pipelines, and right-of-way.

Environmental documentation will deal with existing biological inventories (Department of Fish and Game, U.S. Fish and Wildlife Service) and studies for these or similar areas. Operation studies will utilize the latest hydrology, water quality, and flow standards for the Sacramento-San Joaquin Bay-Delta areas currently under consideration by SWRCB.

In-Delta storage could provide significant operational flexibility which, in turn, would enhance water

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.

supply reliability and ecosystem benefits. The In-Delta and Off-Aqueduct Storage Study must carefully evaluate the unique attributes of Delta storage to assess possible impact to water quality, the ecosystem, existing water projects, and agricultural land. It must also carefully evaluate the attributes of off-aqueduct storage, which could include the enhancement of operational flexibility by providing

additional opportunities to export Delta water when optimum biologic and water quality conditions occur in the Delta.

These studies are intended to narrow the list of potential reservoir sites based on engineering, economic, and environmental considerations.

Conjunctive-Use Program

The term "conjunctive use" denotes a set of water management techniques designed to maximize the complementary use of surface and groundwater storage in order to provide improved water supply reliability. Conceptually, surplus surface water is used to recharge groundwater basins in wetter years. The stored groundwater is extracted when needed to augment diminished surface water supplies during dry years. If they are thoughtfully designed and implemented, conjunctive-use projects can be operated with minimal impact to the environment or to other water users. However, the groundwater component of conjunctive use has become increasingly controversial as it gains more prominence in both the CALFED process and as part of various water transfer proposals. As a result, many counties, particularly in the Sacramento Valley, have adopted ordinances designed to regulate water transfers that use a groundwater substitution technique.

The Department perceives conjunctive use as somewhat of a double-edged sword. On the one hand, in dry years there is the potential for cooperative projects with local agencies to augment existing SWP supplies. On the other hand, given the frequent interconnection of surface and groundwater, conjunctive use and other groundwater development projects, if poorly designed, have the potential to adversely effect SWP supplies. To minimize this adverse potential, increased efforts are required to evaluate water transfer, conjunctive use, and other proposals that could impact the reliability of SWP supplies. The Department's Sacramento Valley Conjunctive-Use Program takes into account both the positive and potentially negative aspects of conjunctive use.

American Basin

Efforts to negotiate an agreement for a conjunctive-use project with the Natomas Central and Pleasant Grove-Verona Mutual Water Companies continue. These negotiations are being undertaken as part of the Opt-in Pilot Program between the Department and the SWP contractors. Under this program, individual SWP contractors have the option of funding project activities in return for receiving the water supply developed by a project. During 1999, six SWP contractors participated in the American Basin Project: (1) The Metropolitan Water District of Southern California; (2) Solano County Water Agency; (3) Santa Clara Valley Water District; (4) Napa County Flood Control and Water Conservation District; (5) Alameda County Flood Control and Water Conservation District-Zone 7; and (6) Castaic Lake Water Agency. The participants negotiated a set of Principles of Participation that set forth a staged approach to develop up to 47,000 acre-feet of dry-year water supply. Using existing facilities, the first stage is designed for early implementation to provide up to 10,000 acre-feet. A second stage entails the construction of a new Sacramento River diversion and new conveyance features in Natomas Central. Both phases use water provided by Natomas to achieve in-lieu recharge. A possible third stage involving storage of the SWP water is being considered. Following the adoption of these Principles of Participation, the participants began negotiation of a project agreement.

Lower Colusa Basin

The Department continues to investigate the conjunctive-use potential of the Lower Colusa Basin in cooperation with Reclamation District No. 108, Colusa County Water District, and the Yolo-Zamora Water District. A proposed project could yield up to 34,000 acre-feet of dry-year water supply for the SWP. During 1999, activities focused on completion of the monitoring-well network being developed, detailed hydrogeologic characterization of the basin, and the development of a groundwater flow model. A cooperative project to develop a Global Positioning System network to evaluate future land subsidence in Yolo County was also completed.

Butte Basin

The Department's efforts in Butte County focused on improving the technical understanding of the Butte Basin groundwater system and on building relationships with local interests. The Department cooperated with the Butte County Department of Water and Resources Conservation to design and develop a monitoring-well network for the basin and to install two extensometers to measure potential land subsidence. The Department also provided technical assistance to the County and to the Butte Basin Water Users Association, including assistance in the evaluation of the Butte Basin groundwater model developed for the association. In addition, the Department completed an evaluation of alternative means of delivering water from Thermalito Afterbay to the Cherokee Strip area for in-lieu recharge, as part of a potential conjunctive-use project with Western Canal Water District. There is significant potential to develop conjunctive-use projects to benefit the SWP in the Butte Basin, provided institutional barriers can be overcome.

Institutional Concerns

Local entities and individuals in the Sacramento Valley and elsewhere are faced with a confusing array of proposals and activities that are sometimes seen as threats to their water supplies and futures. These include the Department's conjunctive use and water transfer programs; CALFED's Bay-Delta Program; the SWRCB's Delta water right hearings and related settlement attempts; activities of USBR in implementing the CVP Improvement Act, contract-renewal negotiations; and other proposals.

Local agencies are increasingly active in developing groundwater management programs and asserting control over water supply development and management activities. The Department works with local agencies and interested parties by providing technical and other assistance to help alleviate local anxieties and build consensus for local and regional conjunctive use. Concurrently, the Department actively monitors and evaluates proposed water transfers and other groundwater management activities to protect the existing SWP water supply.

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 a 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 a 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 a prescribed 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 water supply projects only when conceptual and reconnaissance reports support the project and SWP contractors agree that the project is advantageous.

At this time, no local water supply 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 CVP. Because it requires specific water supply actions, CVPIA directly affects the joint activities of CVP and SWP. The act indirectly influences SWP operations by addressing several Delta environmental issues.

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 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, 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. CVPIA also requires the dedication and management of an additional 800,000 acre-feet of CVP yield for fish and wildlife needs.

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 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.

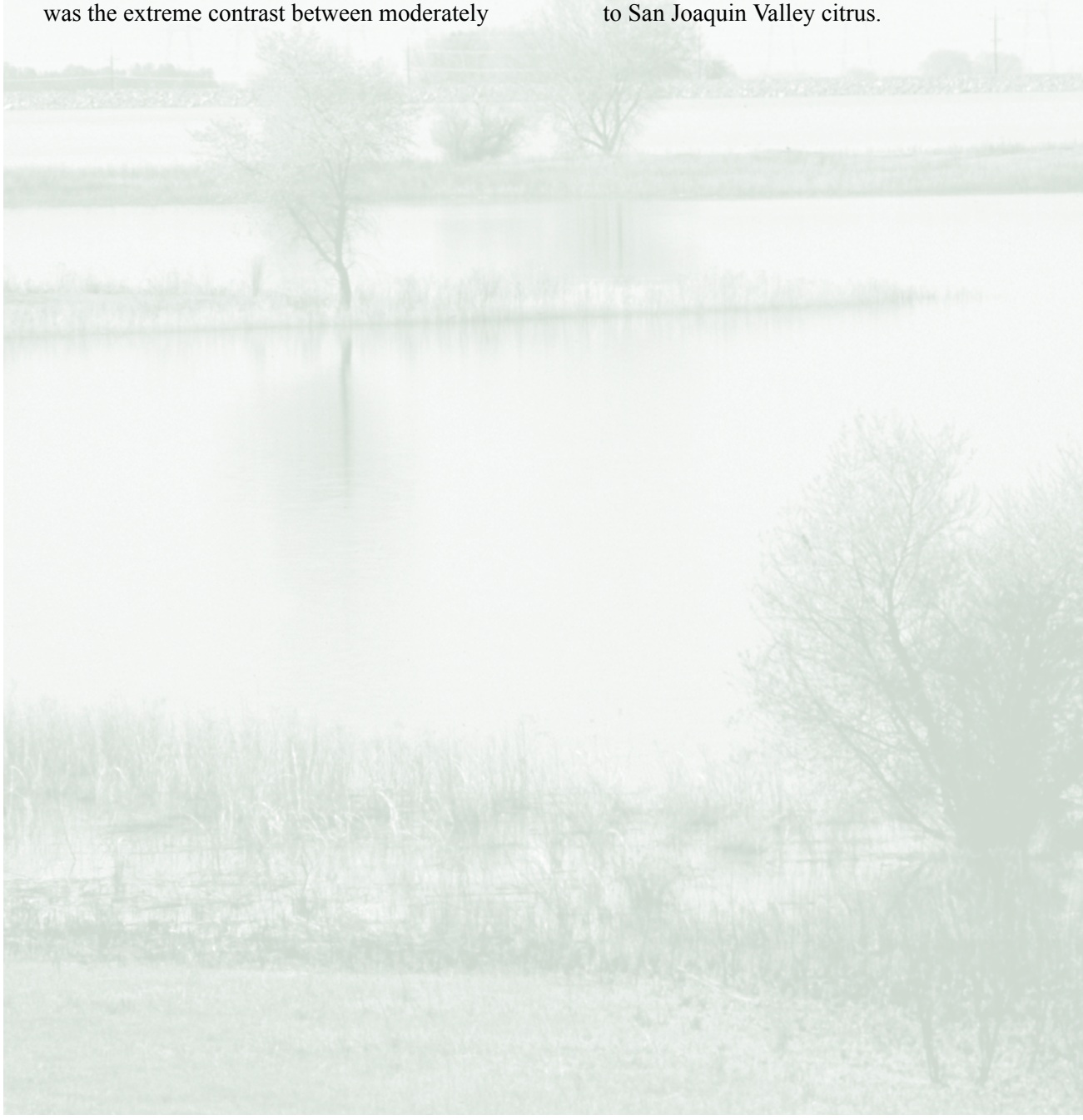
Information in this chapter was contributed by the State Water Project Analysis Office, the Division of Planning and Local Assistance, and the Office of State Water Project Planning.

Chapter 8
Water Supply and Allocation

Inlet works channel at
Silverwood Lake

Significant Events

- Precipitation in water year 1998-99 was near average, making it one of the few near-normal years in the last 25 years.
- The most striking feature of water year 1998-99 was the extreme contrast between moderately wet conditions to the north and dry conditions in the south.
- Very cold weather during the last week in December 1998 caused extensive frost damage to San Joaquin Valley citrus.



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 1998-99

Precipitation

Water year 1998-99 was wet in Northern California, but less than the previous very wet year. Surface temperature patterns in the eastern tropical Pacific switched from warmer to cooler than normal—from El Niño to La Niña. California precipitation followed a typical La Niña pattern of dry in Southern California and above normal in the northern part of the State. The north to south gradient in annual precipitation, snowpack, and runoff in the southern Sierra Nevada was one of the steepest in history. Figure 8-1 shows statewide precipitation by hydrologic region. The southern tier was very dry.

Although some stations on the Napa and Sacramento Rivers exceeded flood stage briefly on February 7 and February 9, water year 1998-99 was a mild year for flood control.

The first part of October 1998 was drier than average, but a significant storm brought rain near the end of the month. Northern Sierra precipitation was about half the monthly average.

November was quite wet, nearly double normal in the northern Sierra. Major weekend storms during the latter half of November brought rains to most portions of the State, but were heavier in the north. December started wet, then turned dry with some very cold weather during the last week of the month. It was the coldest winter since the big freeze of December 1990. The extreme cold caused extensive frost damage to San Joaquin Valley citrus.

Statewide precipitation for the first 3 months of the water year, October through December 1998, was near average, with a pronounced gradient from above average in the north to below average in the south.

After a 30-day dry spell, storms resumed in the middle of January 1999. Estimated statewide precipitation for the month was 95 percent of average, with the seasonal accumulation since October 1, 1998, at 85 percent.

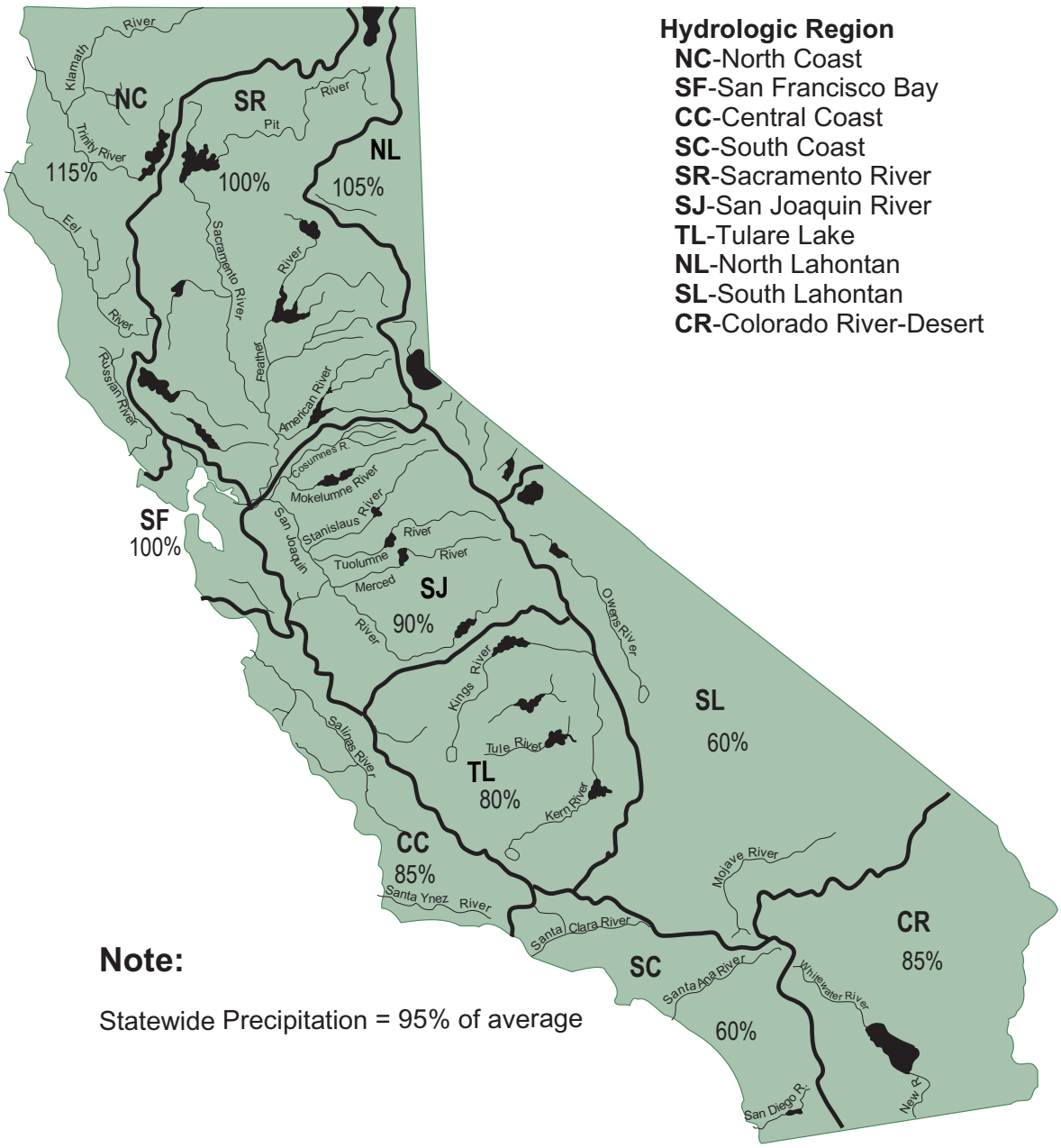
More storms in February 1999 resulted in 150 percent of average precipitation statewide, ranging from 200 percent in the northern regions to a dry 30 percent in the southeastern regions. This raised the statewide seasonal percentages to average.

The February storms caused the highest river stages of the year with significant weir overflow into the Sacramento River bypass system about mid-month. The storms also boosted the snowpack to above average levels.

Precipitation in March was about 80 percent of average statewide. The North Coast and Central Coast had above normal rain but the southern Sierra and Southern California were much below average. The April 1 snowpack was 110 percent overall, but only 60 percent of average in the Tulare Lake region.

Strong shower activity during the first half of April in the coastal and desert regions boosted statewide precipitation to above average (125 percent) for the month. However, normally wetter areas of Northern California had less than average precipitation. The storms were cool and the mountain snowpack continued to increase until near the middle of the month when a week of fair, warm weather began the melting process.

Figure 8-1
Statewide Precipitation by Hydrologic Region, 1998-99 Water Year, in Percentage of Average



May was dry and cooler than normal. June was also dry in the northern part of the State, but some heavy showers raised precipitation totals in the southern half. July and August were near normal overall with unseasonable showers in Southern California during July and some heavy thunderstorms in Northern California during August. Intense lightning on August 22 and 23 started wildfires in Northern California. September was dry (about 25 percent of average precipitation). The water year closed with a statewide estimate of 95 percent of average precipitation.

Runoff

Runoff in Central Valley rivers was less than water year 1997-98, but still well above average, except in the southern end of the Sierra from the Merced River south. The Sacramento River Index runoff was just over 21 million acre-feet, making it the fifth wet year in a row. San Joaquin River Index runoff was slightly under 6 million acre-feet, just over average. The year was classified as "above normal," and as a result, water year 1998-99 ended the run of 4 wet years on the San Joaquin River system.

First Quarter Water Year 1999-00

Precipitation

October was mostly dry at the beginning of water year 1999-00. However, during the last week of the month a powerful Pacific storm brought substantial rain to Northern California mountains and doused the lingering wildfires in the region. The San Joaquin Valley and Southern California remained dry at the end of the month.

November continued the strong north to south gradient in the State. Precipitation during the month was near average in the north but progressively much below average in the south. Seasonal accumulations at the end of the month were average in the northern Sierra, but dry weather in the south lowered the statewide seasonal average to 70 percent.

December was one of the State's driest winter months with only 15 percent of normal monthly precipitation. By the end of the month northern Sierra seasonal precipitation declined to 60 percent of average. The statewide percentage had fallen to about 40 percent and the mountain snowpack was only about one-quarter of the average December 31 water content, and 10 percent of the average April 1 snowpack.

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 1998-99 water year was 107 percent of average, compared to 135 percent of average in water year 1997-98. Total 1998-99 storage in major SWP reservoirs was 3.66 million acre-feet on September 30, 1999, about 730 thousand acre-feet less than storage at the same time in water year 1997-98. September 30 storage at Lake Oroville was 2.43 million acre-feet, about 404,000 acre-feet less than last year. The State's share of San Luis Reservoir storage was 591,796 acre-feet, compared to 900,063 acre-feet last year. The combined storage in southern reservoirs was 640,124 acre-feet on September 30, compared to 662,000 acre-feet at the end of the 1997-98 water year.

Total storage in major SWP reservoirs was about 3.53 million acre-feet at the end of calendar year 1999, compared with 4.4 million acre-feet in 1998. The State's share of San Luis Reservoir storage was about 717,426 acre-feet, compared with 1.07 million acre-feet at the end of 1998. The combined storage in southern reservoirs was about 625,000 acre-feet on December 31, 1999, compared with 628,000 acre-feet in 1998.

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 1998-99 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 1998-99 water year totaled about 4.94 million acre-feet—107 percent of average. Minimum storage occurred December 31, 1999, at 2,186,332 acre-feet—62 percent of its capacity. Maximum storage occurred June 13, 1999, at 3,481,007 acre-feet—about 98 percent of capacity. See Figures 8-2 and 8-3 for monthly and cumulative inflow, respectively, into Lake Oroville.

Total inflow into Lake Oroville during the 1999 calendar year was 4,487,783 acre-feet. Lake Oroville storage at the end of 1999 was 2,186,332 acre-feet. Figure 8-4 compares end-of-month storage in Oroville Reservoir for the 1998 and 1999 calendar years.

San Luis Reservoir. The Department and the U.S. Bureau of Reclamation operate San Luis Reservoir jointly according to operating procedures adopted 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.

At the beginning of the 1998-99 water year, San Luis Reservoir contained 1,617,766 acre-feet—80 percent of its capacity. The SWP share was 903,992 acre-feet. By April 14, 1999, San Luis Reservoir reached its maximum storage for 1999 at 2,029,233 acre-feet—100 percent of normal maximum operating capacity. The highest end-of-month SWP share of storage was in January 1999 at 1,104,028 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, functions primarily as a storage facility for later water delivery in Santa Clara and Alameda Counties. At the beginning of the 1998-99 water year, Lake Del Valle held 30,645 acre-feet—about 40 percent of its maximum capacity of 77,106 acre-feet. Its highest storage occurred May 19, 1999, at 39,752 acre-feet.

By the end of the 1999 water year, on September 30, 1999, storage in Lake Del Valle had dropped to 35,084 acre-feet—45 percent of maximum capacity. Releases to Arroyo Del Valle and South Bay Aqueduct from Lake Del Valle had totaled 10,397 acre-feet for the 1998-99 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 delivery of water to Southern California contractors.

At the beginning of the 1998-99 water year, these reservoirs held 660,621 acre-feet—94 percent of combined normal maximum operating capacity of 701,321 acre-feet. At the end of the water year, they held 640,124 acre-feet—91 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 contractors and SWP storage facilities. In 1999, the SWP diverted 2,706,835 acre-feet at Banks Pumping Plant, including a combined total of 60,283 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 1999 at Banks Pumping Plant; Figure 8-7 shows the monthly amounts of water diverted from the Delta by the SWP and CVP in 1999. CVP diverts water to similar areas from the Delta through Tracy Pumping Plant. CVP diverted about 2,542,202 acre-feet at Tracy Pumping Plant in 1999. 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

Figure 8-2
Monthly Inflow into Lake Oroville, 1997-99 Calendar Years

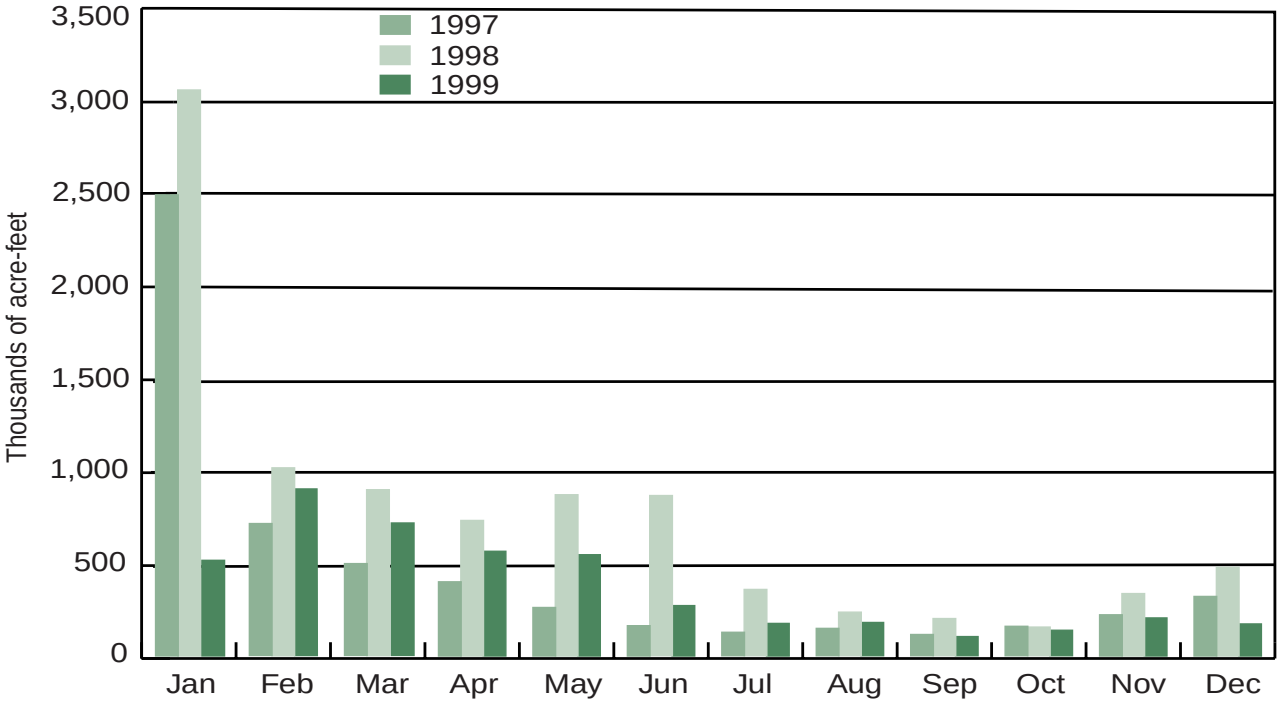


Figure 8-3
Cumulative Inflow into Lake Oroville

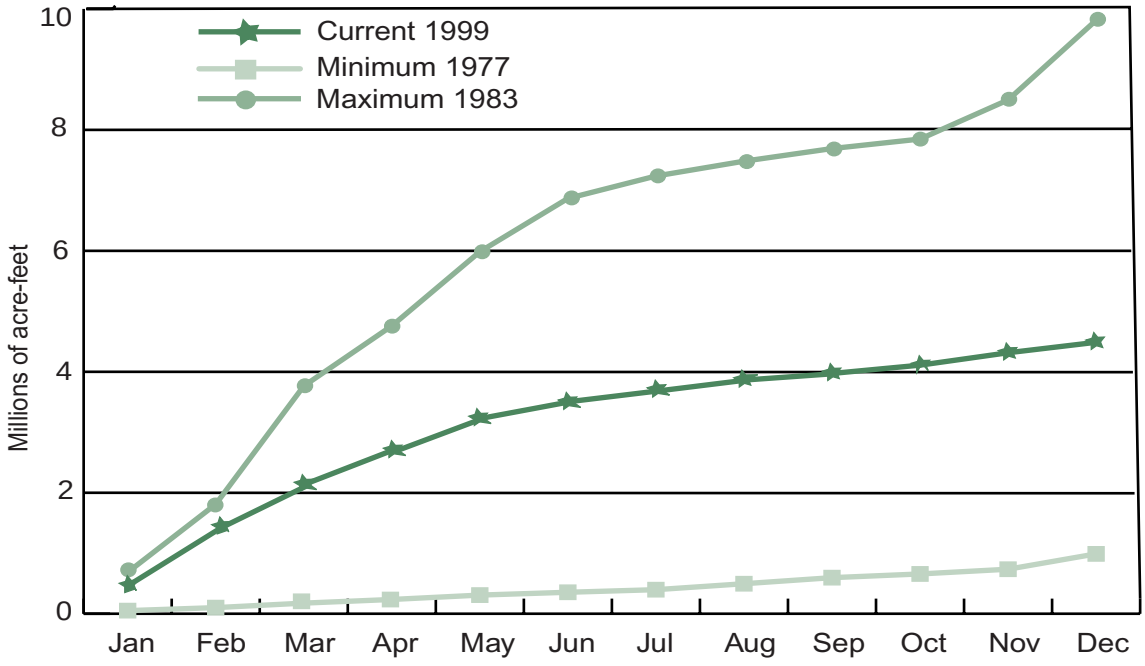


Figure 8-4
End-of-Month Storage in Oroville Reservoir, 1998 and 1999 Calendar Years

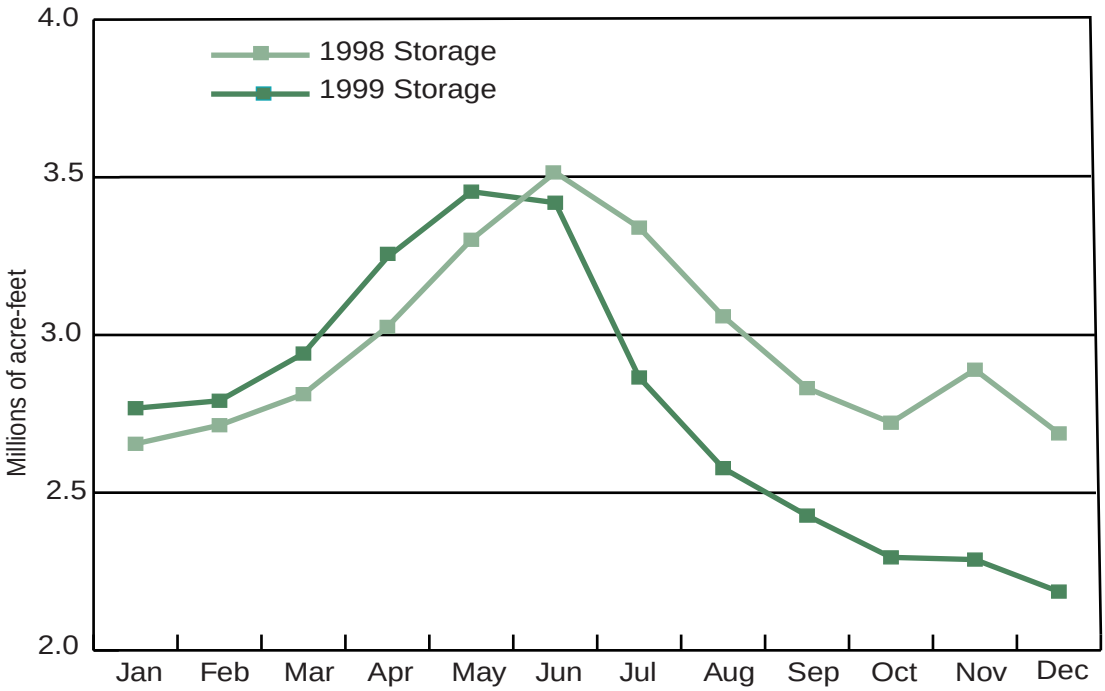


Figure 8-5
End-of-Month Storage in San Luis Reservoir, 1998 and 1999 Calendar Years

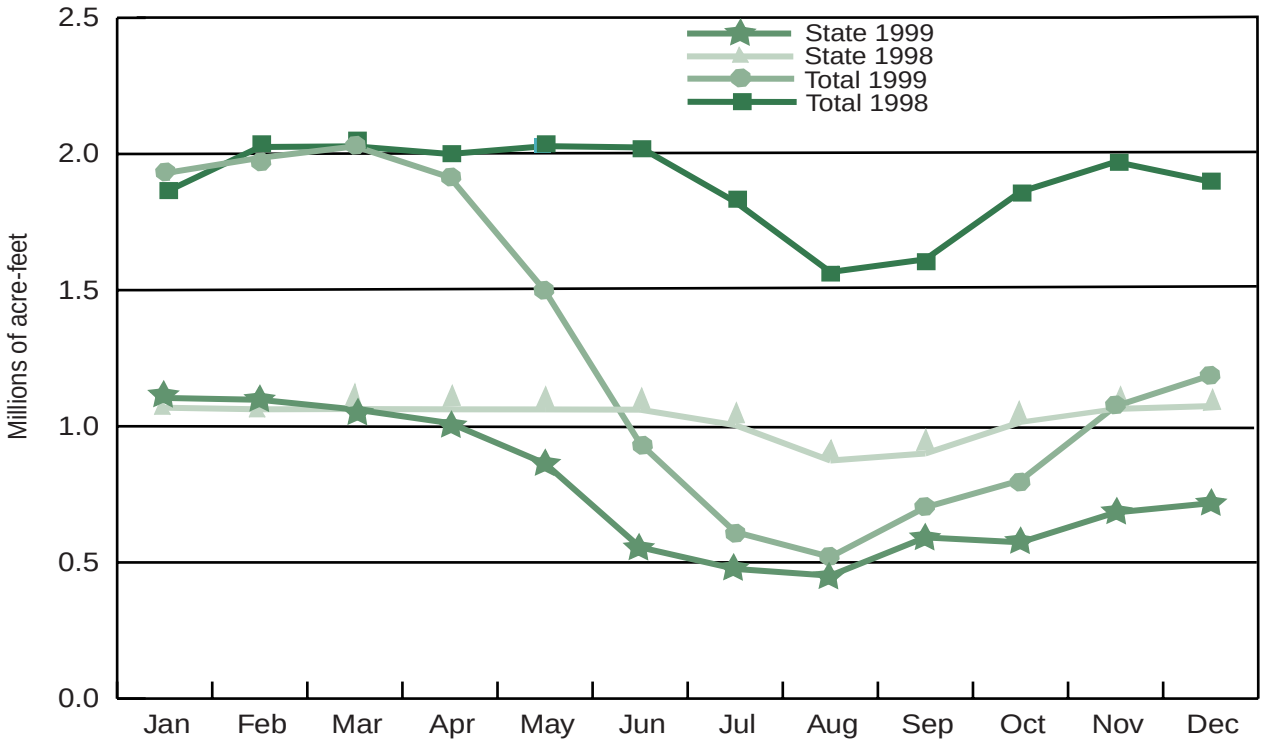


Figure 8-6
State's Share of Water Pumped at Banks Pumping Plant in 1999, by Month

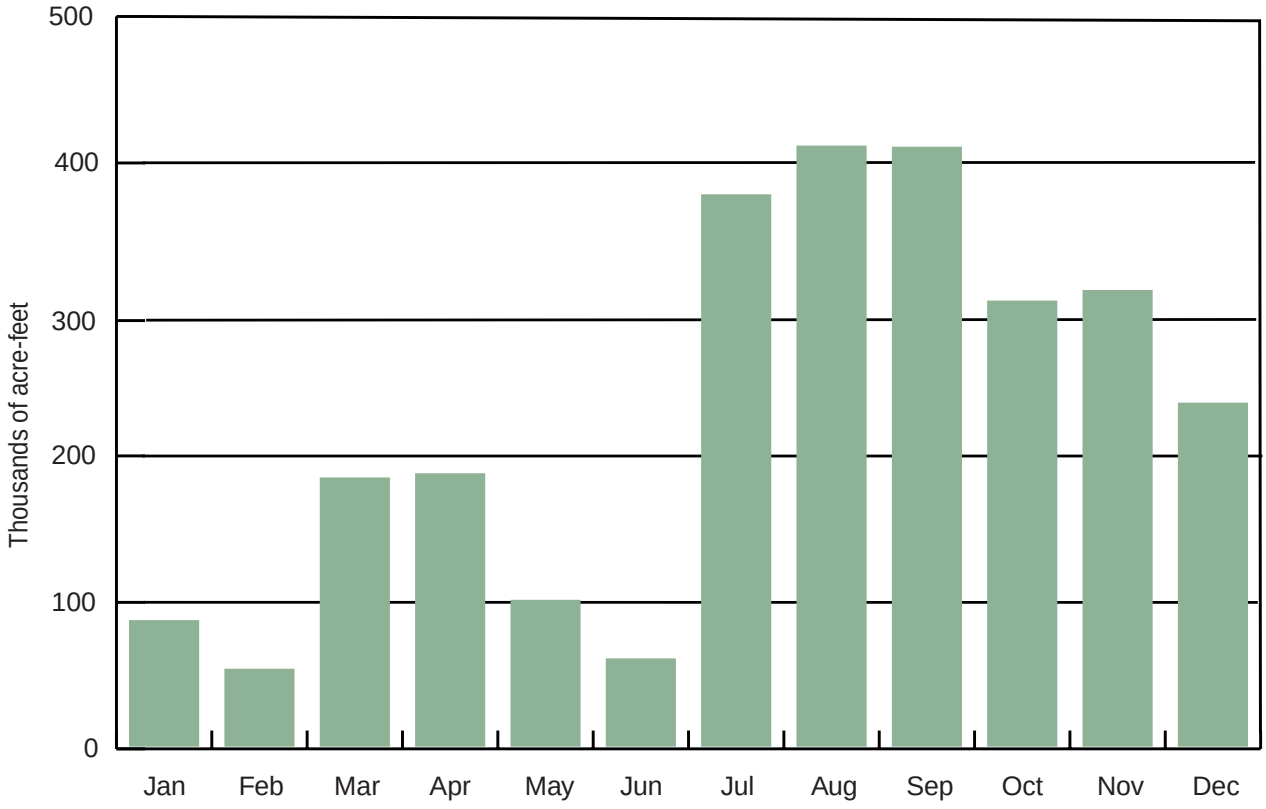
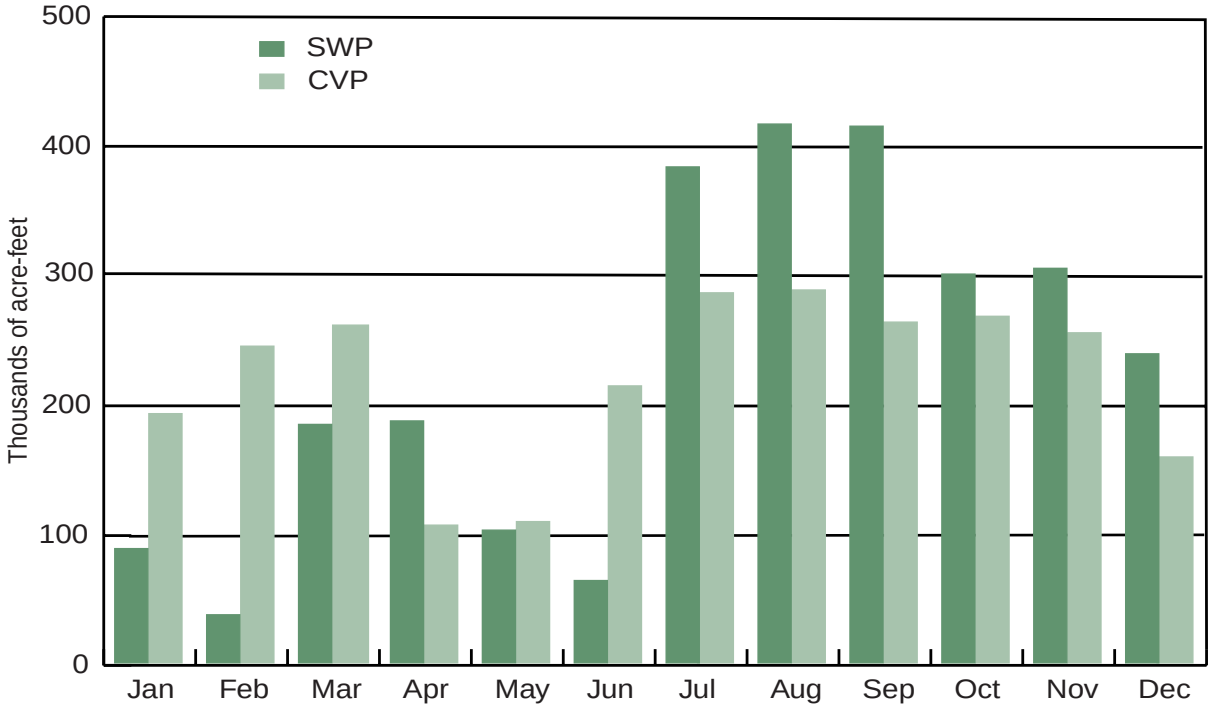


Figure 8-7
Water Diverted from the Sacramento-San Joaquin Delta by the State Water Project and Central Valley Project in 1999, by Month



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 23, 1999, and continuing through November 16, the Department began pumping Cross Valley Canal water at Banks Pumping Plant for USBR in accord with the Cross Valley Canal Wheeling agreements. The initial rate was about 700 acre-feet per day during on-peak hours. Amount pumped during this period was about 19,423 acre-feet.

Combined SWP and CVP Delta exports were highest at around 22,000 acre-feet per day during the months of July, August, and September. Monthly Delta exports in 1999 gradually increased from about 280,461 acre-feet in January to about 703,114 acre-feet in August, before dropping to about 396,753 acre-feet in December. Delta exports totaled about 5.39 million acre-feet for 1999.

The SWP also diverted 44,661 acre-feet at Barker Slough Pumping Plant for delivery to 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 1999, total water pumped through Dos Amigos Pumping Plant to the San Joaquin Valley totaled 4,073,298 acre-feet. Included in that amount are 19,672 acre-feet for CVC water delivered to Westlands Water District. Also included was 1,245,782 acre-feet federal share of pumping at Dos Amigos. Figure 8-8 shows the State's share of water pumped each month.

In 1999, water pumped through Edmonston Pumping Plant for delivery to Southern California totaled 1,000,571 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 8-8
Water Pumped at Dos Amigos Pumping Plant in 1999, by Month

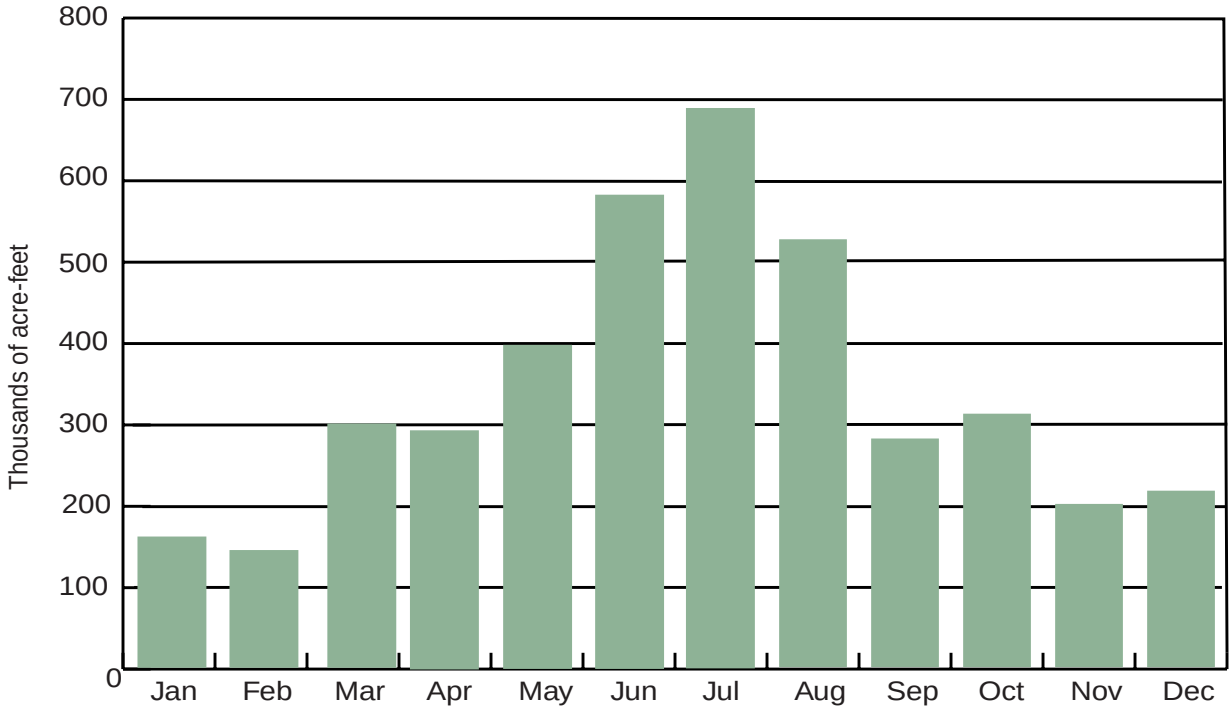
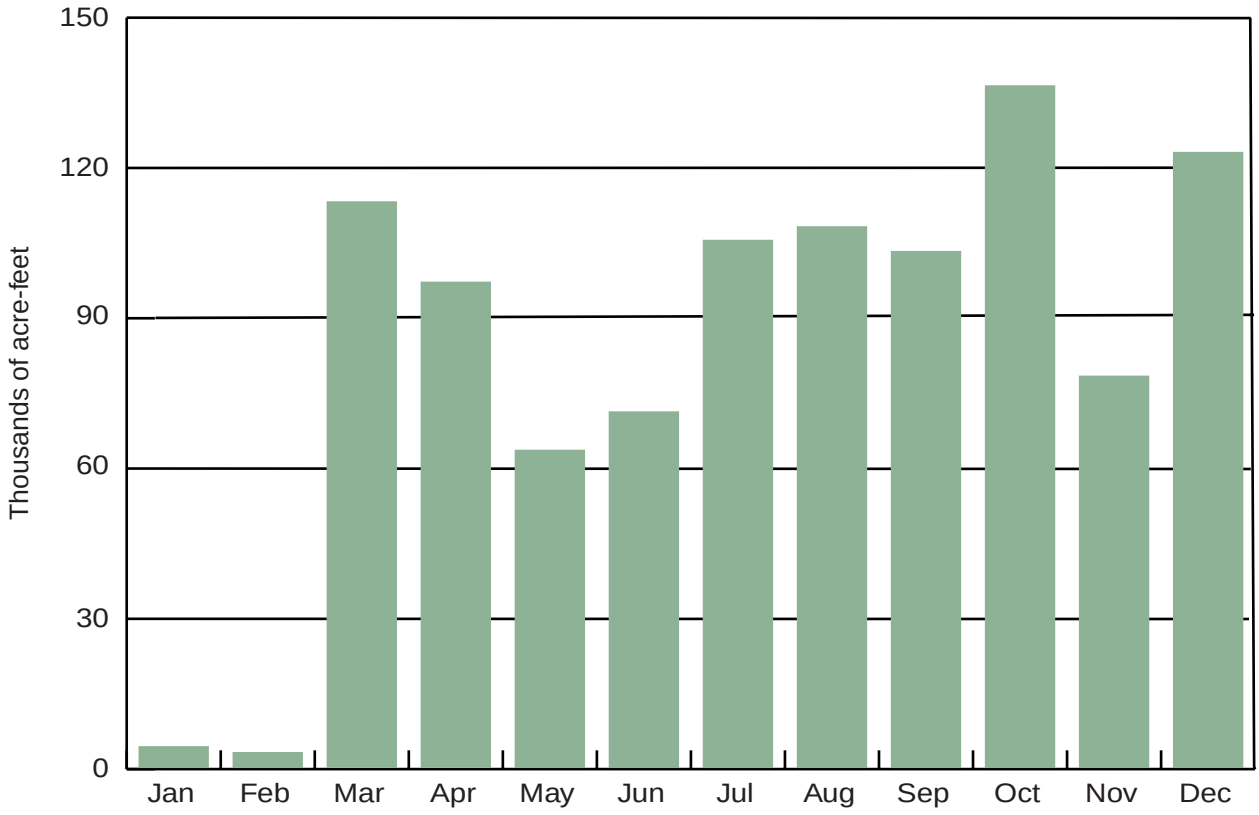


Figure 8-9
Water Pumped at Edmonston Pumping Plant in 1999, by Month



Chapter 9
Water Contracts and Deliveries

East Branch Aqueduct with mountains
in the background

Significant Events

- On October 1, 1998, SWP long-term contractors submitted initial requests for 1999 entitlement deliveries totaling 3.42 million acre-feet. The Department approved deliveries of 2.24 million acre-feet on November 24, 1998, resulting in an initial entitlement allocation for 1999 of 55 percent. Improved water conditions increased the 1999 allocation of entitlement water to 2.44 million acre-feet or 60 percent on February 10, 1999. As a result of additional improvements in water conditions and a reduction in SWP contractor requests to 3.19 million acre-feet, allocations were further increased to 100 percent on March 10, 1999, and remained at that level for the rest of 1999.

- In 1999, 4,095,269 acre-feet of water were conveyed to 27 long-term contractors and 17 other agencies. That amount includes 2,738,891 acre-feet of entitlement water; 158,070 acre-feet of Article 21 water, and 4,324 acre-feet of entitlement-related water for recreation and fish and wildlife.

- The Department executed an amendment to the water supply contract between the County of Butte and the Department to increase Butte's Table A annual entitlements to 2,890 acre-feet for 1999. In 2000, Butte's Table A annual entitlements will remain at 2,890 acre-feet and, in 2001, will increase to the maximum of 27,500 acre-feet.

- The Department executed a Monterey Amendment with Ventura County Flood Control District as Amendment Number 12 to VCFCD's Water Supply Contract. Plumas County Flood Control and Water Conservation District and Empire West Side Irrigation District remain the only long-term State Water Project contractors that have not signed the Monterey Amendment.

- The Department executed two separate amendments to the water supply contracts of Kern County Water Agency and Alameda County Flood Control and Water Conservation District-Zone 7, providing for the permanent transfer of 7,000 acre-feet and 15,000 acre-feet of KCWA's SWP entitlement to ACFCWCD-Zone 7. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural entitlement to urban agencies.

- The Department executed amendments to the water supply contracts of KCWA and Castaic Lake Water Agency that provide for the permanent transfer of 41,000 acre-feet of KCWA's SWP entitlement to CLWA. The transfer is consistent with implementation of the Monterey Amendment.

- The Department executed amendments to the water supply contracts of KCWA and Palmdale Water District that provide for the permanent transfer of 4,000 acre-feet of KCWA's SWP entitlement to PWD. The transfer is consistent with implementation of the Monterey Amendment.

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 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 1999, the Department executed 10 amendments 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 1999, the Department executed 16 water conveyance/storage agreements, and 3 turnout agreements 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 periodically 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 previously amended to incorporate mutually desired changes. Most amendments fall under the following five general categories:

- revision of Table A, "Annual Entitlements," of water supply contracts;
- allocation of costs and benefits for the enlargement or extension of the East Branch and extension of the Coastal Branch of the California Aqueduct;
- purchase of excess capacity in the California Aqueduct;
- provisions to allow contractors, during certain conditions, to carry over undelivered entitlement water from one year for delivery in the next year; and
- implementation of Monterey Agreement principles.

Table 9-1 lists the categories of amendments by contractors.

The following long-term contracts were amended during 1999.

Alameda County Flood Control and Water Conservation District-Zone 7. The Department executed Amendment Number 19 to the Water Supply Contract between ACFCWCD-Zone 7 and the Department on December 21, 1999. The Amendment provided for the permanent transfer of 7,000 acre-feet of SWP agricultural entitlement by ACFCWCD-Zone 7 from KCWA and set forth conditions for the transfer. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural entitlement to urban agencies.

Alameda County Flood Control and Water Conservation District-Zone 7. The Department executed Amendment Number 20 to the Water Supply Contract between ACFCWCD-Zone 7 and the Department on December 29, 1999. The Amendment provided for the permanent transfer of 15,000 acre-feet of SWP agricultural entitlement by ACFCWCD-Zone 7 from KCWA and set forth conditions for the transfer. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural entitlement to urban agencies.

County of Butte. The Department executed Amendment Number 14 to the Water Supply Contract between Butte and the Department on February 26, 1999. The Amendment provided for increasing Butte's Table A annual entitlements to 2,890 acre-feet for 1999. In 2000, Butte's Table A annual entitlements will remain at 2,890 acre-feet. In 2001, Butte's Table A annual entitlements will be increased to the maximum of 27,500 acre-feet.

Castaic Lake Water Agency. The Department executed Amendment Number 18 to the Water Supply Contract between CLWA and the Department on March 31, 1999. The Amendment provided for the permanent transfer of 41,000 acre-feet of SWP agricultural entitlement by CLWA from KCWA, acting on behalf of Wheeler Ridge-Maricopa Water Storage District, and set forth conditions for the transfer. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural entitlement to urban agencies.

Kern County Water Agency. The Department executed Amendment Number 28 to the Water Supply Contract between KCWA and the Department on March 31, 1999. The Amendment provided for the permanent transfer of 41,000 acre-feet of SWP agricultural entitlement by KCWA, acting on behalf of WRMWSD, to CLWA and set forth conditions for the transfer. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural entitlement to urban agencies.

Kern County Water Agency. The Department executed Amendment Number 29 to the Water Supply Contract between KCWA and the Department on December 29, 1999. The Amendment provided for the permanent transfer of 4,000 acre-feet of SWP agricultural entitlement by KCWA, acting on behalf of Belridge Water Storage District, to Palmdale Water

Table 9-1
Amendments to Water Supply Contracts, December 31, 1999, by Category and Contracting Agency

	State Water Project Amendment Category				
Contracting Agency	*Revision of Annual Entitlements*	*East Branch Extension or Enlargement and Coastal Branch Extension*	*Purchase of Excess Capacity*	*Provisions to Carry Over Entitlement Water*	*Monterey Agreement*
Upper Feather River Area					
City of Yuba City	✓				✓
County of Butte	✓			✓	✓
Plumas County Flood Control and Water Conservation District				✓	
North Bay Area					
Napa County Flood Control and Water Conservation District	✓			✓	✓
Solano County Water Agency	✓		✓	✓	✓
South Bay Area					
Alameda County Flood Control and Water Conservation District-Zone 7	✓			✓	✓
Alameda County Water District				✓	✓
Santa Clara Valley Water District	✓			✓	✓
San Joaquin Valley Area					
County of Kings				✓	✓
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				✓	✓

District and set forth conditions for the transfer. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural entitlement to urban agencies.

Kern County Water Agency. The Department executed Amendment Number 30 to the Water Supply Contract between KCWA and the Department on December 21, 1999. The Amendment provided for the permanent transfer of 7,000 acre-feet of SWP agricultural entitlement by KCWA to ACFCWCD-Zone 7 and set forth conditions for the transfer. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural entitlement to urban agencies.

Kern County Water Agency. The Department executed Amendment Number 31 to the Water Supply Contract between KCWA and the Department on December 29, 1999. The Amendment provided for the permanent transfer of 15,000 acre-feet of SWP agricultural entitlement by KCWA to ACFCWCD-Zone 7 and set forth conditions for the transfer. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural entitlement to urban agencies.

Palmdale Water District. The Department executed Amendment Number 16 to the Water Supply Contract between PWD and the Department on December 29, 1999. The Amendment provided for the permanent transfer of 4,000 acre-feet of SWP agricultural entitlement by PWD from KCWA, acting on behalf of BWSD, and set forth conditions for the transfer. The transfer is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural entitlement to urban agencies.

Monterey Amendments

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. The Monterey Amendments are discussed in detail in Chapter 1, *Summary of Significant Events*, of Bulletin 132-95.

On August 12, 1999, the Department executed one Monterey Amendment with Ventura County Flood Control District as Amendment Number 12 to VCFCD's Water Supply Contract. Plumas County Flood Control and Water Conservation District and Empire West Side Irrigation District remain the only long-term SWP contractors who have not signed the Monterey Amendment.

The Planning and Conservation League filed a lawsuit on December 27, 1995, challenging the California Environmental Quality Act compliance for the Monterey Amendment. A Sacramento County Superior Court judge later dismissed the lawsuit. PCL appealed the decision and the parties await the Court of Appeals decision. Additional information can be found in Chapter 6, *Legislation and Litigation*.

Miscellaneous Agreements with Long-Term SWP Contractors

Water Conveyance/Storage Agreements

During 1999, agreements were executed with long-term contractors as described below.

Alameda County Flood Control and Water Conservation District-Zone 7. The agreement, among ACFCWCD-Zone 7, KCWA, and the Department, provided for the delivery of a portion of ACFCWCD-Zone 7's 1999 entitlement water, Article 21 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, expected to be executed in March 2000, 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 1999, the Department delivered 20,000 acre-feet of ACFCWCD-Zone 7's 1999 SWP entitlement water and 2,910 acre-feet of Article 21 water for storage by SWSD.

Alameda County Water District. An agreement, executed March 3, 1999, among ACWD, KCWA, and the Department, provided for the delivery of a portion of ACWD's 1999 entitlement water, Article 21 water, and other water supplies, to be stored in, and later recovered from, groundwater basins within KCWA, in accordance with the ACWD and Semitropic Water Storage District 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, 1997, and 1998. These agreements were in accordance with the provisions of the Monterey Amendment. During 1999, the Department delivered 13,720 acre-feet of ACWD's 1999 SWP entitlement water and 2,781 acre-feet of Article 21 water for storage by SWSD.

Dudley Ridge Water District. A letter agreement, dated July 24, 1999, and executed August 3, 1999, approved the delivery of up to 10,000 acre-feet of DRWD's 1999 Article 21 water and up to 10,000 acre-feet of DRWD's 1999 SWP entitlement water to the Kern Water Bank and the return of a like amount of water by December 31, 2009. The Department approved similar agreements in 1996, 1997, and 1998. During 1999, the actual amount of Article 21 water delivered to KWB was 1,321 acre-feet.

Dudley Ridge Water District. A letter agreement, among the Department, DRWD, and San Gabriel Valley Municipal Water District, approved the storage of up to 5,000 acre-feet of DRWD 1999 SWP entitlement water in SGVMWD. The return of the stored water will be accomplished through an exchange of SGVMWD's entitlement. In 1999, 3,500 acre-feet of DRWD's entitlement and 229 acre-feet of DRWD's Pool B purchase water were delivered to SGVMWD pursuant to this agreement. The letter agreement is expected to be executed in February 2000.

Empire West Side Irrigation District. A letter agreement executed April 6, 1999, between the Department and EWSID allowed EWSID to take unscheduled water when the Delta is in excess conditions. EWSID took 176 acre-feet of unscheduled water in 1999.

Kern County Water Agency. A letter agreement dated July 20, 1999, and executed August 2, 1999, between the Department, KCWA, and Tulare Lake Basin Water Storage District approved the exchange of up to 9,000 acre-feet of KCWA's 1999 SWP entitlement to TLBWSD. The agreement facilitated transfers between KCWA, TLBWSD, the City of Fresno, and J. G. Boswell Company. The City of Fresno provided up to 9,000 acre-feet of its CVP water from the Friant-Kern Canal to KCWA prior to May 31, 1999; KCWA exchanged an equivalent amount of its 1999 SWP entitlement water to TLBWSD; TLBWSD delivered KCWA entitlement water to J. G. Boswell Company; and Boswell provided an equivalent amount of Kings River water to the City of Fresno. The actual amount exchanged was 9,000 acre-feet.

Kern County Water Agency. A letter agreement between the Department and KCWA approved the exchange of up to 12,500 acre-feet of KCWA 1999 SWP entitlement water for a like amount of CVP water to be acquired by Westlands Water District. SWP water will be delivered to WWD via Reach 7 of the California Aqueduct in Kings County for use within the SWP service area. In return, WWD will acquire a like amount of CVP (Friant Unit) water and deliver it to KCWA through its groundwater banking program by December 31, 1999. A total of 12,500 acre-feet was exchanged. The letter agreement is expected to be executed in January 2000.

Kern County Water Agency. A letter agreement dated April 9, 1999, between the Department and KCWA approved the transfer of up to 40,776 acre-feet of KCWA's 1999 SWP entitlement water to WWD. The agreement facilitated a water transfer from landholders within member units of the agency—Lost Hills Water District, Berrenda Mesa Water District, BWSD, and TLBWSD—to land they farmed in WWD. Similar transfers were approved by the Department in 1996, 1997, and 1998. The actual amount of water transferred from KCWA to WWD in 1999 was 40,776 acre-feet.

Kern County Water Agency. A letter agreement between the Department and KCWA approved the exchange of up to 11,000 acre-feet of KCWA's 1999 SWP entitlement water to WWD for a like amount of WWD's water delivered to KCWA. WWD acquired Kern River water from La Hacienda, Incorporated, and delivered it from Lake Isabella to KCWA's service area. In exchange, a like quantity of KCWA's 1999 SWP entitlement water was delivered to WWD's service area within Kings County. A total of 7,923 acre-feet was delivered to WWD in 1999 under this agreement. The letter agreement is expected to be executed in January 2000.

Kern County Water Agency. A letter agreement executed September 13, 1999, among KCWA, TLBWSD, and the Department, approved the transfer of up to 400 acre-feet of KCWA's 1999 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 was 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 400 acre-feet was transferred. Similar transfers were approved by the Department in 1996, 1997, and 1998.

Metropolitan Water District of Southern California. A letter agreement dated September 3, 1999, between MWD and the Department approved the delivery of up to 35,000 acre-feet of MWD's 1999 SWP entitlement water to WWD in exchange for an equivalent amount of eastside San Joaquin Valley water obtained by WWD. The eastside San Joaquin Valley water will be conveyed to the Arvin-Edison groundwater storage basin as part of the Arvin-Edison/Metropolitan Water Management Program. The letter agreement is expected to be executed in January 2000. During 1999, a total of 33,000 acre-feet was delivered to WWD pursuant to this agreement.

San Bernardino Valley Municipal Water District. A letter agreement executed March 29, 1999, between SBVMWD and the Department allowed SBVMWD to introduce and store up to 9,000 acre-feet of local water from the Santa Ana River and Mill Creek in Devil Canyon afterbays during 1999. The local water could also be exchanged for water in San Luis Reservoir for later delivery to SBVMWD or rediverted through the San Gabriel pipeline to SBVMWD facilities served from the SBVMWD pipeline. No local water was introduced into SWP facilities under this agreement in 1999.

Santa Clara Valley Water District. An agreement, among SCVWD, KCWA, and the Department, provided for the delivery of a portion of SCVWD's 1999 SWP entitlement water, Article 21 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 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. The Department approved similar agreements in 1996, 1997, and 1998. In 1999, a total of 14,520 acre-feet of entitlement water and 15,480 acre-feet of Article 21 water was delivered to SWSD pursuant to this agreement. The agreement is expected to be executed in March 2000.

Solano County Water Agency. A letter agreement, executed July 9, 1999, among the Department, SCWA, and Mojave Water Agency, approved the exchange of up to 3,000 acre-feet of SCWA's 1999 SWP entitlement water to MWA for the return of up to 1,500 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, 2009, during a dry year. A similar agreement was executed in 1997 and 1998. The full 3,000 acre-feet was delivered to MWA in 1999.

Tulare Lake Basin Water Storage District. A letter agreement, dated March 11, 1999, and executed March 29, 1999, between the Department and TLBWSD approved the transfer of up to 3,000 acre-feet of TLBWSD's 1999 SWP entitlement water to WWD. The agreement facilitated the water transfer from Hansen Ranches, a landowner in TLBWSD, to

lands farmed in WWD under the name of Vista Verde Farms, Incorporated. The actual amount transferred was 3,000 acre-feet. The Department approved similar transfers in 1996, 1997, and 1998.

Tulare Lake Basin Water Storage District. A letter agreement between the Department and TLBWSD approved the exchange of up to 13,770 acre-feet of 1999 SWP entitlement water from TLBWSD to WWD. WWD will return an equivalent quantity of local surface water to TLBWSD by December 31, 2009. TLBWSD's SWP water was delivered to land within WWD's service area in both Kings County and Fresno County. The amount of 1999 entitlement water delivered to WWD pursuant to this agreement was 13,770 acre-feet. The letter agreement is expected to be executed in February 2000.

During 1999, water was delivered pursuant to agreements with long-term contractors executed prior to 1999 as described below.

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 BBID's local water annually to ACFCWCD-Zone 7 through SWP facilities. BBID may only transfer real water that has been made available for transfer by conservation and fallowing. In 1999, 2,000 acre-feet of BBID's local water was pumped at Banks Pumping Plant and delivered to ACFCWCD-Zone 7's turnouts in the South Bay Aqueduct.

Antelope Valley-East Kern Water Agency. An agreement dated November 13, 1997, between AVEK, MWA, and the Department provided for a change in the delivery of up to 2,250 acre-feet of MWA's SWP entitlement water annually to AVEK's turnout. The agreement allowed for the delivery of MWA's SWP entitlement water to a solar energy generating station within its service area that was not located near any of its conveyance facilities. AVEK had delivery capability and agreed to provide service. During 1999, the Department delivered 1,439 acre-feet of Mojave's 1999 SWP entitlement water to AVEK's turnouts.

Dudley Ridge Water District. An agreement dated May 22, 1998, among DRWD, TLBWSD, and the Department provided for a change in the delivery of up to 1,000 acre-feet of DRWD's SWP entitlement water annually to TLBWSD's turnout. The agreement allowed for the delivery of DRWD's SWP entitlement water to landowners within its service area that were not located near any of its conveyance facilities. TLBWSD's conveyance facilities bifurcate DRWD's service area and have conveyance capability to deliver water to the subject landowner. During 1999, the Department delivered 86 acre-feet of DRWD's 1999 SWP entitlement water to TLBWSD's turnouts.

Kern County Water Agency. A letter agreement among 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. 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, was executed August 31, 1998. 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. The exchange was completed when 20,000 acre-feet of TLBWSD's water was delivered to WWD in 1999.

Metropolitan Water District of Southern California. A letter agreement dated April 13, 1999, approving a second amendment to the interim December 29, 1997, letter agreement among the Department, MWD, KCWA, and Arvin-Edison Water Storage District, extended the term of the letter agreement to June 30, 1999, and allowed the additional delivery of up to 50,000 acre-feet of MWD's 1999 SWP entitlement and Article 21 water to AEWSD for storage. The 1997 letter agreement allowed for the delivery of up to 20,000 acre-feet of MWD's 1997

entitlement water to groundwater storage by February 28, 1998. The September 17, 1998, amendment extended the term through December 20, 1998, and allowed for an additional delivery of up to 62,205 acre-feet of 1998 entitlement water to groundwater storage. A total of 50,406 acre-feet of MWD's 1999 entitlement was delivered to AEWSD under this agreement. An additional 11,756 acre-feet of MWD's 1999 entitlement water was delivered to AEWSD from July through December 1999. The agreement for this additional water is pending.

Metropolitan Water District of Southern California. A letter agreement dated August 21, 1995, between the Department, MWD, and KCWA, approved the delivery of MWD's SWP entitlement and other water supplies for storage and later recovery to the Semitropic Water Storage District groundwater basin. 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. During 1999, the Department delivered 53,010 acre-feet of MWD's 1999 SWP entitlement and 22,840 acre-feet of Article 21 water for storage in SWSD.

Turnout Agreements

Kern County Water Agency and Arvin-Edison Water Storage District. An agreement dated January 26, 1999, among the Department, KCWA, and AEWSD, allowed the construction, operation, and maintenance of the Arvin-Edison Turnout, located at milepost 277.3, Reach 14C of the California Aqueduct. The turnout has a design capacity of 200 cfs.

Kern County Water Agency and Kern Water Bank Authority. An agreement dated November 12, 1999, among the Department, KCWA, and Kern Water Bank Authority, allowed the construction, operation, and maintenance of the 95th Street East Turnout, located at milepost 237.19, Reach 12E of the California Aqueduct. The turnout has a design capacity of 750 cfs.

Antelope Valley-East Kern Water Agency. On November 23, 1999, the Department approved the construction of the Rancho Vista Turnout for AVEKWA located at milepost 339.68, Reach 20B on the East Branch of the California Aqueduct. The turnout has a design capacity of 5 cfs.

Agreements Related to the Monterey Amendments

Turnback Water Pool Program. Under Article 56(d) of the Monterey Amendments, the fourth year of the Turnback Water Pool Program was initiated through Notice to the State Water Project Contractors No. 99-01, dated January 22, 1999. 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 1999 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. In 1999, 237,904 acre-feet of water were purchased under the Turnback Water Pool Program.

Transactions for Pool A occurred in January and February 1999; transactions for Pool B occurred in March 1999. Turnback water sold for $11.79 per acre-foot, 50 percent of the Delta Water Rate through Pool A, and for $5.90 per acre-foot, 25 percent of the Delta Water Rate through Pool B. All money collected through the Turnback Water Pool Program was paid to the selling contractors. The 1999 Turnback Water Pool Program closed April 1, 1999.

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

- County of Butte sold 934 acre-feet
- City of Yuba City sold 4,260 acre-feet
- SLOCFCWCD sold 11,331 acre-feet
- SBCFCWCD sold 4,587 acre-feet
- AVEKWA sold 8,122 acre-feet
- CLWA sold 4,000 acre-feet
- Crestline-Lake Arrowhead Water Agency sold 1,530 acre-feet
- Mojave Water Agency sold 5,000 acre-feet
- SBVMWD sold 41,560 acre-feet
- DRWD purchased 6,000 acre-feet
- KCWA purchased 24,060 acre-feet
- TLBWSD purchased 51,264 acre-feet

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

- County of Butte sold 1,156 acre-feet
- City of Yuba City sold 3,840 acre-feet
- NCFCWCD sold 4,650 acre-feet
- SLOCFCWCD sold 9,730 acre-feet
- SBCFCWCD sold 9,484 acre-feet
- AVEKWA sold 55,360 acre-feet
- CLWA sold 18,200 acre-feet
- CLAWA sold 2,320 acre-feet
- SBVMWD sold 41,040 acre-feet
- SGVMWD sold 10,800 acre-feet
- DRWD purchased 2,000 acre-feet
- KCWA purchased 21,300 acre-feet
- TLBWSD purchased 85,900 acre-feet
- CVWD purchased 27,380 acre-feet
- DWA purchased 20,000 acre-feet

Other Administrative Action

Santa Barbara County Flood Control and Water Conservation District and Water Agency. A letter dated August 13, 1999, from the Department to SBCFCWCD approved the extension of the deadline for reacquisition of all or a portion of the 12,214 acre-feet of previously established relinquished SWP entitlement until July 1, 2000. The original deadline of March 12, 1998, previously established by the Department, had been extended several times. SBCFCWCD did not take delivery of any reacquired water in 1999.

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 1, 1999, and December 31, 1999.

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 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, 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 1975-76 through

- individual 3-party contracts with the Department and USBR, executed in 1975 and 1976 with individual amendments to those contracts, signed on December 28, 1995; and,
- 2-year interim renewal contracts for the term March 1, 1996, through February 28, 1998, and further renewed on March 1, 1998, through February 29, 2000.

Between January 1, 1999, and December 31, 1999, the Department executed agreements with CVC contractors as follows:

- On May 10, 1999, LTRID and PID requested the Department change the point of delivery for their full 1999 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 December 21, 1999, for Department conveyance

of up to 31,102 acre-feet of water for each district, of which 6,340 acre-feet for LTRID and 3,446 acre-feet for PID were delivered to WWD.

- On April 29, 1999, May 18, 1999, and August 5, 1999, Kern-Tulare Water District requested the Department change the point of delivery for up to 28,000 acre-feet of their 1999 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 district executed an agreement on December 21, 1999, for Department conveyance of up to 28,000 acre-feet of water for the district, of which 5,955 acre-feet was delivered to WWD.
- On April 29, 1999, May 18, 1999, and August 5, 1999, Rag-Gulch Water District requested the Department change the point of delivery for up to 9,310 acre-feet of their 1999 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 district executed an agreement on December 21, 1999, for Department conveyance of up to 9,310 acre-feet of water for the district, of which 3,634 acre-feet was delivered to WWD.

Friant Water Users Authority. An agreement dated September 24, 1999, between the Department and Friant Water Users Authority asked the Department to convey up to 25,000 acre-feet of CVP water from the San Luis Canal at Kettleman City to the CVC turnout at Tupman. The water was identified as "Exchange Water" in a July 6, 1999, letter agreement between the Friant Water Users Authority, various CVP Friant water service contractors, and USBR. This water was to be conveyed from July 1, 1999, through February 29, 2000. In 1999, a total of 12,804 acre-feet was delivered.

Musco Olive Products, Inc. An annual agreement dated September 16, 1999, 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, 1999, through September 30, 1999. A total of 360 acre-feet was delivered.

Tracy Golf and Country Club. An agreement dated April 28, 1999, among the Department, USBR, and Tracy Golf and Country Club, provided for the conveyance of up to 1,240 acre-feet of CVP water through SWP facilities to the Tracy Golf and Country Club. This water was to be conveyed from March 1, 1999, through February 29, 2000. A total of 204 acre-feet was delivered in 1999.

U.S. Department of Veterans Affairs. An annual agreement, dated February 24, 1999, and replaced July 27, 1999, 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, 1999, through September 30, 1999. A total of 43 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, eight 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. Modification No. 007, executed August 17, 1999, extended the agreement through April 10, 2000, and defined the water delivery rates for 2000. Modification No. 008, dated November 29, 1999, obligated funding for that period. The Department conveyed 10,476 acre-feet for USBR to the Kern National Wildlife Refuge in 1999.

U.S. Bureau of Reclamation. A letter agreement dated August 18,1999, between the Department and USBR had the Department exporting 16,281 acre-feet of CVP water from the Sacramento-San Joaquin Delta from February 24 through 27, 1999. The CVP water transported to O'Neill Forebay replaced exports foregone at the Tracy Pumping Plant in January due to fishery protection measures pursuant to

Anadromous Fish Restoration Program Action No. 8 implemented by USBR under provisions of CVPIA.

Other Agreements–Turnouts

In 1999, there were no new turnout agreements with any miscellaneous agencies.

Amendments to Miscellaneous Agreements with Other Agencies

An amendment, dated April 19, 1999, modified and clarified provisions of the existing contract between the Department and ECCID dated January 7, 1981, and the contract among the Department, ECCID, and CCWD, dated April 11, 1991, to allow the diversion of water under both contracts at the Contra Costa Canal intake and the Los Vaqueros Project intake and to increase the allowable rate of diversion at those locations. The Amendment also defined the allowable place of use and allowed the use of water outside ECCID boundaries only with the prior written consent of the Department. The Amendment is expected to be executed in February 2000.

Water Deliveries

Water Allocations

Each year, by October 1, the SWP long-term water contractors submit initial requests for water deliveries for the subsequent calendar year. Initial entitlement allocations for the coming year are made by the Department in December and are based on operations studies that assume 90 percent exceedence of historic water supply, current reservoir storage, and total requests by the SWP water contractors. Forecasts for the year are updated as the hydrological conditions change. Allocations are increased or decreased depending on both actual and projected hydrologic conditions. Unless otherwise warranted, the final May 1 water supply forecast sets delivery allocations for the remainder of the year.

On October 1, 1998, SWP long-term contractors submitted initial requests for 1999 entitlement deliveries totaling 3.42 million acre-feet. The Department approved deliveries of 2.24 million acre-feet on November 24, 1998, resulting in an initial entitlement allocation for 1999 of 55 percent. Improved water conditions increased the 1999 allocation of entitlement water to 2.44 million acre-feet or 60 percent on February 10, 1999. As a result of additional improvements in water conditions and a reduction in SWP contractor requests to 3.19 million acre-feet, allocations were further increased to 100 percent on March 10, 1999, and remained at that level for the rest of 1999.

SWP 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

- 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 1999, 4,095,269 acre-feet of water were conveyed to 27 long-term contractors and 17 other agencies. That amount includes

- 2,738,891 acre-feet of entitlement water[1], (with 2,391,985 acre-feet delivered to long-term contractors' service areas, 130,969 acre-feet to WWD, and 215, 937 acre-feet delivered under the Turnback Water Pool Program);
- 158,070 acre-feet of Article 21 water; (see page 114 for more information.)
- 4,324 acre-feet of SWP water for recreation, fish and wildlife; and
- 1,193,984 acre-feet of 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 1999.

[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.

Specific information about water deliveries made to long-term contractors and other agencies during 1999 and historical deliveries from 1962 through 1999 are presented in the following three sections, each with a corresponding table:

- Water Delivered to Long-Term Water Supply Contractors in 1999, by Service Area (Table 9-2);
- Water Delivered in 1999, by Month (Table 9-3); and
- Total Amounts of Annual Water Entitlements and Water Conveyed, by Type, 1962-99 (Table 9-4).

Water Deliveries and Credits to Long-Term SWP Contractors

Table 9-2 shows amounts of water delivered in 1999 and future entitlement credits granted to long-term contractors through 1999. The following information about specific columns in Table 9-2 is arranged by column number.

1999 Entitlement Water Delivered. Columns 1 through 5 show a detailed breakdown of entitlement water delivered to long-term water supply contractors in 1999.

Turnback Pool Water. Column 4 shows 215,937 acre-feet of turnback pool water was delivered to long-term water supply contractors in 1999.

1998 Carryover Entitlement Water Delivered During 1999. 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 no entitlement water was carried over from 1998 for delivery in 1999.

Article 12(d) Water. Column 7 shows no Article 12(d) water was delivered in 1999.

Article 14(b) Water. No 1998 entitlement water was delivered in 1999 under Article 14(b).

Total Entitlement Water Delivered. Column 9 shows all entitlement water delivered in 1999—a total of 2,738,891 acre-feet.

1999 Article 21 Water. Column 10 shows 158,070 acre-feet of 1999 Article 21 water delivered to long-term water supply contractors in 1999. Article 21 water is water in excess of that required to meet all demands for entitlement water and water to be stored in SWP reservoirs. Article 21 was amended most recently by the Monterey Amendment. Long-term water supply contractors who signed their Monterey Amendment receive interruptible water under Article 21. Long-term water supply contractors who have not signed the Monterey Amendment receive surplus and unscheduled water.

Total SWP Water Delivered. Column 11 shows 2,896,961 acre-feet of total SWP water delivered in 1999. This includes total entitlement water and Article 21 water.

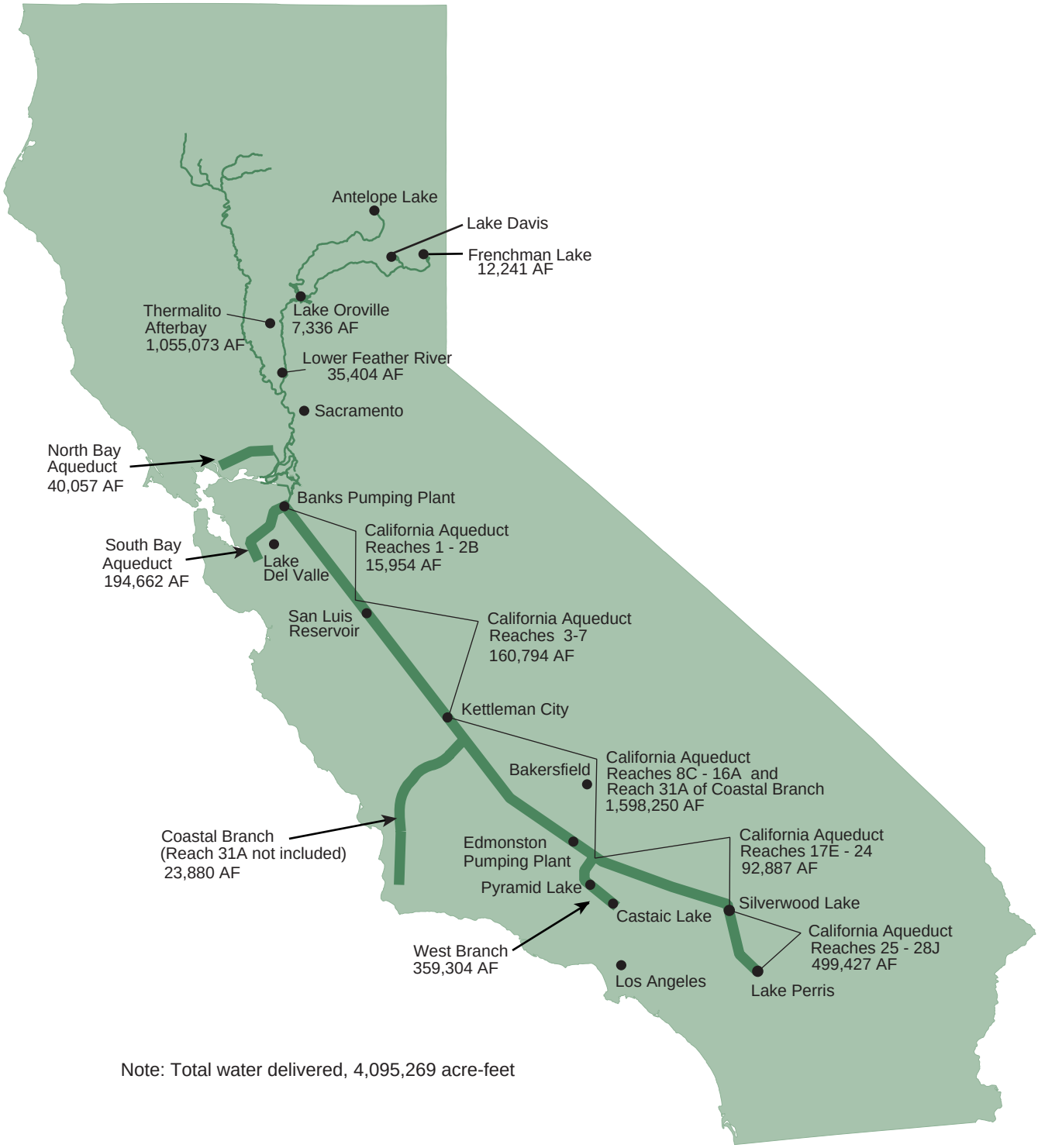
Non-SWP Water Deliveries. Column 12 includes deliveries of nonproject water to long-term water contractors. Nonproject water is generally local water that a SWP contractor has a water right to, or water purchased from or exchanged with non-SWP agencies. In 1999, other water deliveries totaled 25,029 acre-feet.

Total Deliveries. Column 13 shows total amounts of water delivered to long-term contractors. In 1999, the SWP delivered 2,921,990 acre-feet to 27 long-term contractors. This amount included 2,738,891 acre-feet of entitlement water, 158,070 acre-feet of Article 21 water, and 25,029 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 1 year to the next.

In 1999, 303,966 acre-feet of carryover water were approved for future delivery. In addition, 14,956 acre-feet of 14(b) carryover were approved

Figure 9-1
Water Delivered in 1999 and Delivery Locations
of Long-Term Water Supply Contractors and Feather River Area Districts
with Water Rights Agreements with the Department



Note: Total water delivered, 4,095,269 acre-feet

Table 9-2
Water Delivered to Long-Term Contractors through 1999, by Service Area
(Acre-Feet)

Water Contractor or Agency	Water Deliveries in 1999												
	Entitlement Water Deliveries												
	1999 Entitlement Water without Transfers, Exchanges, and Storage (1)	1999 Entitlement Water Delivered through Transfers and Exchanges (2)	1999 Entitlement Water Delivered to Storage (3)	Turnback Pool Water (4)	Total 1999 Entitlement Water Delivered (5)	1998 Carryover Entitlement Water Delivered during 1999 (6)	Makeup Water Per Article 12(d) (7)	Makeup Water Per Article 14(b) (8)	Total Entitlement Water (9)	1999 Article 21 Water (10)	Total SWP Water Delivered (11)	Non-SWP Water Deliveries (12)	Total Deliveries (13)
Feather River Area													
County of Butte	286				286				286		286		286
Plumas County FCWCD	0				0				0		0		0
City of Yuba City	1,096				1,096				1,096		1,096		1,096
North Bay Area													
Napa County FCWCD	4,550				4,550				4,550	754	5,304		5,304
Solano County WA	34,753				34,753				34,753		34,753		34,753
South Bay Area													
Alameda County FCWCD-Zone 7	26,000		20,000		46,000				46,000	2,910	48,910	17,024	65,934
Alameda County WD	21,151		13,720		34,871				34,871	2,781	37,652	7,992	45,644
Santa Clara Valley WD	52,945		14,520		67,465				67,465	15,480	82,945		82,945
San Joaquin Valley Area													
Castaic Lake WA	4,086				4,086				4,086		4,086		4,086
County of Kings	4,000				4,000				4,000		4,000		4,000
Dudley Ridge WD	49,784		3,500	5,066[a]	58,350				58,350	4,990	63,340		63,340
Empire West Side ID	3,000				3,000				3,000	176[b]	3,176		3,176
Kern County WA	1,007,144	61,199[c]		42,154	1,077,497				1,110,497	58,241	1,168,738		1,168,738
Oak Flat WD	4,871				4,871				4,871		4,871		4,871
Tulare Lake Basin WSD	81,730	46,256[d]		121,337	249,323				249,323	49,898	299,221		299,221
Central Coastal Area													
San Luis Obispo County FCWCD	3,743				3,743				3,743		3,743		3,743
Santa Barbara County FCWCD	20,137				20,137				20,137		20,137		20,137
Southern California													
Antelope Valley-East Kern WA	69,073	1,439[e]			70,512				70,512		70,512		70,512
Castaic Lake WA	28,813				28,813				28,813		28,813		28,813
Coachella Valley WD	23,100			27,380	50,480				50,480		50,480		50,480
Crestline-Lake Arrowhead WA	1,132				1,132				1,132		1,132	13	1,145
Desert WA	38,100			20,000	58,100				58,100		58,100		58,100
Littlerock Creek ID	342				342				342		342		342
Metropolitan WD	681,605	33,000[f]	115,172		829,777				829,777	22,840	852,617		852,617
Mojave WA	3,705	3,000[g]			6,705				6,705		6,705		6,705
Palmdale WD	13,278				13,278				13,278		13,278		13,278
San Bernardino Valley MWD	12,874				12,874				12,874		12,874		12,874
San Gabriel Valley MWD	18,000				18,000				18,000		18,000		18,000
San Gorgonio Pass WA	0				0				0		0		0
Ventura County FCD	1,850				1,850				1,850		1,850		1,850
Total	**2,211,148**	**144,894**	**166,912**	**215,937**	**2,738,891**	**0**	**0**	**0**	**2,738,891**	**158,070**	**2,896,961**	**25,029**	**2,921,990**

[a] Includes delivery of 229 acre-feet of Pool B water to San Gabriel WA Storage Basin.
[b] Unscheduled water.
[c] Includes deliveries of: 20,423 acre-feet of exchange entitlement water to Westlands WD; 40,776 acre-feet of transfer entitlement water to Westlands WD.
[d] Includes deliveries of: 33,770 acre-feet of exchange entitlement water to Westlands WD; 9,000 acre-feet of exchange entitlement water from Kern County WA; 3,000 acre-feet of transfer entitlement water to Westlands WD; 400 acre-feet of transfer entitlement water from Kern County WA; and 86 acre-feet of transfer entitlement water from Dudley Ridge WD.
[e] Transferred entitlement water from Mojave WA.
[f] Exchanged entitlement water to Westlands WD.
[g] Exchanged entitlement water from Solano County WA.

Table 9-3
Water Delivered in 1999, by Month
(Acre-Feet)

Contracting Agency and Type of Service	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*1999 Total Deliveries*	*1999 Contract Entitlement*
Feather River Area														
City of Yuba City														
Entitlement water	0	0	0	0	0	0	590	506	0	0	0	0	1,096	9,600
County of Butte														
Entitlement water	77	77	80	2	1	2	5	20	4	2	13	3	286	2,890
Plumas County Flood Control and Water Conservation District														
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	1,450
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	0	0	0	0	0	0	1	0	0	0	0	0	1	
Last Chance Creek Water District														
Regulated delivery of local supply	0	0	0	0	0	1,690	3,602	4,108	1,835	835	171	0	12,241	
Thermalito Irrigation District														
Regulated delivery of local supply	106	106	110	130	282	335	401	350	297	237	109	104	2,567	
Oroville-Wyandotte Irrigation District														
Regulated delivery of local supply	170	158	167	200	929	1,080	1,190	1,170	1,110	967	0	195	7,336	
Western Canal Water District														
Regulated delivery of local supply	3,786	0	0	5,009	59,061	45,843	62,240	48,028	11,937	33,090	32,474	25,143	326,611	
Joint Water Districts Board														
Regulated delivery of local supply	18,950	0	0	19,680	131,460	110,557	126,350	116,320	55,712	44,240	54,850	47,490	725,609	
Oswald Water District														
Regulated delivery of local supply	0	0	0	132	303	414	407	286	180	0	0	0	1,722	
Tudor Mutual Water Company														
Regulated delivery of local supply	0	0	0	131	1,152	1,013	1,343	318	535	80	0	0	4,572	
Garden Highway Mutual Water Company														
Regulated delivery of local supply	0	0	0	1,633	2,635	3,416	4,275	3,243	1,607	0	0	0	16,809	
Plumas Mutual Water Company														
Regulated delivery of local supply	0	0	0	54	2,122	2,448	2,497	1,336	1,250	1,498	0	0	11,205	
SWP	77	77	80	2	1	2	596	526	4	2	13	3	1,383	
Non-SWP	23,012	264	277	26,969	197,944	166,796	202,305	175,159	74,463	80,947	87,604	72,932	1,108,672	
Feather River Area Total	**23,089**	**341**	**357**	**26,971**	**197,945**	**166,798**	**202,901**	**175,685**	**74,467**	**80,949**	**87,617**	**72,935**	**1,110,055**	**13,940**
North Bay Area														
Napa County Flood Control and Water Conservation District														
Entitlement water	722	380	286	52	209	242	302	244	202	199	853	859	4,550	15,850
Article 21 water	161	425	168	0	0	0	0	0	0	0	0	0	754	
Agency Total	883	805	454	52	209	242	302	244	202	199	853	859	5,304	
Solano County Water Agency														
Entitlement water	1,694	549	439	658	2,672	3,706	5,356	5,210	4,373	4,568	2,470	3,058	34,753	39,170
Exchange entitlement water to Mojave Water Agency *	0	0	0	0	0	0	0	0	82	986	982	950	3,000	
Agency Total (* excluded)	1,694	549	439	658	2,672	3,706	5,356	5,210	4,373	4,568	2,470	3,058	34,753	
SWP	2,577	1,354	893	710	2,881	3,948	5,658	5,454	4,575	4,767	3,323	3,917	40,057	
North Bay Area Total	**2,577**	**1,354**	**893**	**710**	**2,881**	**3,948**	**5,658**	**5,454**	**4,575**	**4,767**	**3,323**	**3,917**	**40,057**	**55,020**
South Bay Area														
Alameda County Flood Control and Water Conservation District-Zone 7														
Entitlement water	107	0	0	0	4,347	0	4,936	3,669	3,913	4,102	2,779	2,147	26,000	46,000
Stored entitlement water	0	0	0	0	0	17,300	2,700	0	0	0	0	0	20,000	
Stored Article 21 water	0	0	2,040	870	0	0	0	0	0	0	0	0	2,910	
General Wheeling	0	0	0	0	0	0	0	1,000	1,000	0	0	0	2,000	
Local water	1,841	1,727	1,849	2,257	500	5,245	853	45	80	242	156	229	15,024	
Agency Total	1,948	1,727	3,889	3,127	4,847	22,545	8,489	4,714	4,993	4,344	2,935	2,376	65,934	
Alameda County Water District														
Entitlement water	1,868	0	1,634	1,561	2,085	0	156	4,314	3,777	3,452	840	1,464	21,151	42,000
Stored entitlement water	0	0	0	0	0	12,620	1,100	0	0	0	0	0	13,720	
Stored Article 21 water	491	830	1,140	320	0	0	0	0	0	0	0	0	2,781	
Local Water	0	1,370	326	417	0	2,381	3,498	0	0	0	0	0	7,992	
Agency Total	2,359	2,200	3,100	2,298	2,085	15,001	4,754	4,314	3,777	3,452	840	1,464	45,644	

Table 9-3 (Continued)
Water Delivered in 1999, by Month
(Acre-Feet)

Contracting Agency and Type of Service	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*1999 Total Deliveries*	*1999 Contract Entitlement*
Santa Clara Valley Water District														
Entitlement water	1,632	1,221	0	0	1,079	3,767	6,233	8,625	8,333	7,716	7,115	7,224	52,945	100,000
Stored entitlement water	0	0	0	0	0	14,520	0	0	0	0	0	0	14,520	
Stored Article 21 water	600	5,390	7,620	1,870	0	0	0	0	0	0	0	0	15,480	
Agency Total	2,232	6,611	7,620	1,870	1,079	18,287	6,233	8,625	8,333	7,716	7,115	7,224	82,945	
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	2	1	4	5	12	21	24	20	22	15	8	5	139	
SWP	4,700	7,442	12,438	4,626	7,523	48,228	15,149	16,628	16,045	15,285	10,742	10,840	169,646	
Non-SWP	1,841	3,097	2,175	2,674	500	7,626	4,351	1,045	1,080	242	156	229	25,016	
South Bay Area Total	**6,541**	**10,539**	**14,613**	**7,300**	**8,023**	**55,854**	**19,500**	**17,673**	**17,125**	**15,527**	**10,898**	**11,069**	**194,662**	**188,000**
San Joaquin Valley Area														
Castaic Lake Water Agency														
Entitlement water	106	860	1,470	1,038	256	63	46	47	0	0	0	200	4,086	12,700
County of Kings														
Entitlement water	0	0	0	400	400	500	500	500	400	400	400	500	4,000	4,000
Dudley Ridge Water District														
Entitlement water	1,599	1,021	1,151	3,210	7,192	9,568	9,600	9,600	4,346	2,294	203	0	49,784	53,370
Article 21 water	744	597	1,775	523	0	0	0	0	0	0	0	0	3,669	
Stored Article 21 water	1,321	0	0	0	0	0	0	0	0	0	0	0	1,321	
Purchase Pool A entitlement water	0	0	0	0	0	0	3,274	1,006	0	0	256	301	4,837	
Purchase Pool B entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	
Stored Pool B entitlement water (San Gabriel WA Storage Basin) *	0	0	0	0	0	0	0	0	0	0	0	229	229	
Stored entitlement water (San Gabriel WA Storage Basin) *	0	0	0	0	0	0	0	0	0	0	493	3,007	3,500	
Transfer entitlement water to Tulare Lake Basin WSD *	0	0	0	0	0	0	86	0	0	0	0	0	86	
Agency Total (* excluded water)	3,694	1,618	2,926	3,733	7,192	9,568	12,874	10,606	4,346	2,294	952	3,537	63,340	
Empire West Side Irrigation District														
Entitlement water	0	0	180	148	449	504	540	629	157	142	248	3	3,000	3,000
Article 21 unscheduled water	0	0	176	0	0	0	0	0	0	0	0	0	176	
Agency Total	0	0	356	148	449	504	540	629	157	142	248	3	3,176	
Kern County Water Agency														
Entitlement water	10,751	14,362	21,463	38,454	94,937	157,802	242,820	196,552	83,937	79,541	43,591	22,934	1,007,144	1,087,730
Article 21 water	11,919	6,970	23,825	15,527	0	0	0	0	0	0	0	0	58,241	
Purchase Pool A entitlement water	0	0	0	0	0	1,300	0	0	3,700	1,027	5,556	9,271	20,854	
Purchase Pool B entitlement water	0	0	0	0	347	0	0	1,875	6,300	8,587	3,645	546	21,300	
Exchange entitlement water to Westlands Water District *	0	0	0	0	0	0	0	10,500	3,406	4,600	1,080	837	20,423	
Exchange entitlement water to Tulare Lake Basin WSD *	0	0	0	0	0	0	2,000	2,000	0	0	5,000	0	9,000	
Transfer entitlement water to Westlands Water District *	0	0	0	0	0	0	18,000	22,776	0	0	0	0	40,776	
Transfer entitlement water to Tulare Lake Basin WSD *	0	0	0	0	0	0	200	200	0	0	0	0	400	
Agency Total (* excluded water)	22,670	21,332	45,288	53,981	95,284	159,102	242,820	198,427	93,937	89,155	52,792	32,751	1,107,539	
Oak Flat Water District														
Entitlement water	3	29	152	380	764	1,004	1,122	776	246	268	8	119	4,871	5,700
Tulare Lake Basin Water Storage District														
Entitlement water	0	0	0	2,934	11,277	20,330	20,330	21,330	5,529	0	0	0	81,730	118,500
Article 21 water	12,439	5,058	26,198	6,203	0	0	0	0	0	0	0	0	49,898	
Purchase Pool A entitlement water	0	0	0	0	0	7,149	16,557	9,884	17,674	0	0	0	51,264	
Purchase Pool B entitlement water	0	0	0	0	0	0	0	0	60	27,893	27,744	14,376	70,073	
Exchange entitlement water from Kern County WA	0	0	0	0	0	0	2,000	2,000	0	0	5,000	0	9,000	
Transfer entitlement water from Kern County WA	0	0	0	0	0	0	200	200	0	0	0	0	400	
Transfer entitlement water from Dudley Ridge WD	0	0	0	0	0	0	86	0	0	0	0	0	86	
Exchange entitlement water to Westlands Water District *	0	0	0	5,000	15,000	0	0	0	0	0	0	13,770	33,770	
Transfer entitlement water to Westlands Water District *	0	0	0	0	1,000	1,000	1,000	0	0	0	0	0	3,000	
Agency Total (* excluded water)	12,439	5,058	26,198	9,137	11,277	27,479	39,173	33,414	23,263	27,893	32,744	14,376	262,451	
Westlands Water District														
Transfer entitlement water from Kern County WA	0	0	0	0	0	0	18,000	22,776	0	0	0	0	40,776	
Transfer entitlement water from Tulare Lake Basin WSD	0	0	0	0	1,000	1,000	1,000	0	0	0	0	0	3,000	
Exchange entitlement water from Kern County WA	0	0	0	0	0	0	0	10,500	3,406	4,600	1,080	837	20,423	
Exchange entitlement water from Tulare Lake Basin WSD	0	0	0	5,000	15,000	0	0	0	0	0	0	13,770	33,770	
Exchange entitlement water from MWD	0	0	0	0	0	0	0	15,000	9,000	6,000	3,000	0	33,000	
Total Entitlement	0	0	0	5,000	16,000	1,000	19,000	48,276	12,406	10,600	4,080	14,607	130,969	

Table 9-3 (Continued)
Water Delivered in 1999, by Month
(Acre-Feet)

Contracting Agency and Type of Service	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*1999 Total Deliveries*	*1999 Contract Entitlement*
Water from Lower Tule River	0	0	0	0	0	0	0	0	0	2,000	4,340	0	6,340	
Water from Pixley ID	0	0	0	0	0	0	0	0	0	2,000	1,446	0	3,446	
Water from Kern-Tulare WD	0	0	0	0	0	0	0	0	0	2,500	3,455	0	5,955	
Water from Rag Gulch WD	0	0	0	0	0	0	0	0	0	2,500	1,134	0	3,634	
Total CVP water	0	0	0	0	0	0	0	0	0	9,000	10,375	0	19,375	
Agency Total (* excluded water)	0	0	0	5,000	16,000	1,000	19,000	48,276	12,406	19,600	14,455	14,607	150,344	
Recreation/Fish and Wildlife														
Department of Fish and Game	29	26	18	38	42	120	93	124	120	95	41	66	812	
Department of Parks and Recreation	2	1	1	6	11	14	14	12	11	16	4	1	93	
Total	31	27	19	44	53	134	107	136	131	111	45	67	905	
SWP	38,943	28,924	76,233	73,461	131,275	198,854	315,682	292,311	134,486	130,463	90,376	62,424	1,573,432	
Non-SWP	0	0	176	0	0	0	0	0	0	9,000	10,375	0	19,551	
San Joaquin Valley Area subtotal	38,943	28,924	76,409	73,461	131,275	198,854	315,682	292,311	134,486	139,463	100,751	62,424	1,592,983	1,282,000
San Joaquin Valley Area														
CVP Water Annual Contracts														
Tracy Golf and CC	0	0	0	0	17	42	50	36	20	17	12	10	204	
Musco Olive Products, Inc.	39	39	36	33	32	35	5	5	21	46	42	27	360	
U.S. Department of Veteran Affairs	2	2	3	2	4	5	6	5	5	4	2	3	43	
Subtotal	41	41	39	35	53	82	61	46	46	67	56	40	607	
Cross Valley Canal Contracts														
To Westlands WD from Lower Tule River *	0	0	0	0	0	0	0	0	0	2,000	4,340	0	6,340	
To Westlands WD from Pixley ID *	0	0	0	0	0	0	0	0	0	2,000	1,446	0	3,446	
To Westlands WD from Kern-Tulare WD *	0	0	0	0	0	0	0	0	0	2,500	3,455	0	5,955	
To Westlands WD from Rag Gulch WD *	0	0	0	0	0	0	0	0	0	2,500	1,134	0	3,634	
Subtotal (* excluded water)	0	0	0	0	0	0	0	0	0	0	0	0	0	
U.S. Bureau Of Reclamation														
USFWS Kern National Wildlife Refuge	254	0	0	0	645	61	205	1,857	3,607	3,847	0	0	10,476	
Friant Water Users Authority	0	0	0	0	0	0	4,494	1,544	2,874	3,892	0	0	12,804	
USBR	0	16,281	0	0	0	0	0	0	0	0	0	0	16,281	
Subtotal	254	16,281	0	0	645	61	4,699	3,401	6,481	7,739	0	0	39,561	
Recreation/fish and wildlife water (San Luis)	24	23	15	39	42	110	86	113	105	92	36	55	740	
SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	
Non-SWP	319	16,345	54	74	740	253	4,846	3,560	6,632	16,898	10,467	95	60,283	
San Joaquin Valley Area subtotal	319	16,345	54	74	740	253	4,846	3,560	6,632	16,898	10,467	95	60,283	
SWP	38,943	28,924	76,233	73,461	131,275	198,854	315,682	292,311	134,486	130,463	90,376	62,424	1,573,432	
Non-SWP	319	16,345	230	74	740	253	4,846	3,560	6,632	25,898	20,842	95	79,834	
San Joaquin Valley Area Total	39,262	45,269	76,463	73,535	132,015	199,107	320,528	295,871	141,118	156,361	111,218	62,519	1,653,266	1,282,000
Central Coastal Area														
San Luis Obispo County Flood Control and WCD														
Entitlement water	194	287	272	279	342	351	357	390	343	340	273	315	3,743	25,000
Santa Barbara County Flood Control and WCD														
Entitlement water	1,017	857	1,222	1,293	2,105	2,002	2,363	2,458	2,335	2,073	1,081	1,331	20,137	45,486
SWP	1,211	1,144	1,494	1,572	2,447	2,353	2,720	2,848	2,678	2,413	1,354	1,646	23,880	
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	
Central Coastal Area Total	1,211	1,144	1,494	1,572	2,447	2,353	2,720	2,848	2,678	2,413	1,354	1,646	23,880	70,486

Table 9-3 (Continued)
Water Delivered in 1999, by Month
(Acre-Feet)

Contracting Agency and Type of Service	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*1999 Total Deliveries*	*1999 Contract Entitlement*
Southern California Area														
Antelope Valley-East Kern Water Agency														
Entitlement water	2,406	1,873	3,967	4,876	7,594	8,841	9,814	9,221	8,293	6,318	3,072	2,798	69,073	138,400
Transfer entitlement water from Mojave Water Agency	106	88	83	87	144	164	162	208	147	124	54	72	1,439	
Agency Total	2,512	1,961	4,050	4,963	7,738	9,005	9,976	9,429	8,440	6,442	3,126	2,870	70,512	
Castaic Lake Water Agency														
Entitlement water	975	754	1,156	1,283	2,411	2,908	3,710	3,787	3,324	3,314	2,701	2,490	28,813	41,500
Coachella Valley Water District														
Entitlement water	1,058	1,163	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,087	23,100	23,100
Purchase Pool B entitlement water	0	0	0	0	0	3,911	3,912	3,912	3,912	3,912	3,912	3,909	27,380	
Agency Total	1,058	1,163	2,088	2,088	2,088	5,999	6,000	6,000	6,000	6,000	6,000	5,996	50,480	
Crestline-Lake Arrowhead Water Agency														
Entitlement water	53	30	39	70	53	112	170	168	173	119	53	92	1,132	5,800
Local water	0	12	0	1	0	0	0	0	0	0	0	0	13	
Agency Total	53	42	39	71	53	112	170	168	173	119	53	92	1,145	
Desert Water Agency														
Entitlement water	1,746	1,919	3,443	3,443	3,444	3,444	3,444	3,444	3,444	3,444	3,444	3,441	38,100	38,100
Purchase Pool B entitlement water	0	0	0	0	0	2,857	2,857	2,857	2,857	2,857	2,857	2,858	20,000	
Agency Total	1,746	1,919	3,443	3,443	3,444	6,301	6,301	6,301	6,301	6,301	6,301	6,299	58,100	
Littlerock Creek Irrigation District														
Entitlement water	0	0	15	37	51	65	54	49	41	30	0	0	342	2,300
Metropolitan Water District of Southern California														
Entitlement water	32,316	20,071	39,072	50,469	39,006	44,344	63,870	68,942	60,903	109,277	68,490	84,845	681,605	2,011,500
Stored entitlement water	0	0	8,041	30,036	51,184	14,155	0	0	2,958	137	4,292	4,369	115,172	
Stored Article 21 water	850	7,950	10,120	3,920	0	0	0	0	0	0	0	0	22,840	
Exchange entitlement water to Westlands Water District*	0	0	0	0	0	0	0	15,000	9,000	6,000	3,000	0	33,000	
Agency Total (* excluded)	33,166	28,021	57,233	84,425	90,190	58,499	63,870	68,942	63,861	109,414	72,782	89,214	819,617	
Mojave Water Agency														
Entitlement water	113	8	129	279	221	678	779	118	0	0	0	1,380	3,705	75,800
Exchange entitlement water from Solano County WA	0	0	0	0	0	0	0	0	82	986	982	950	3,000	
Transfer entitlement water to Antelope Valley-East Kern WA *	106	88	83	87	144	164	162	208	147	124	54	72	1,439	
Agency Total (* excluded water)	113	8	129	279	221	678	779	118	82	986	982	2,330	6,705	
Palmdale Water District														
Entitlement water	20	28	342	316	1,472	1,877	2,185	2,253	1,879	1,530	743	633	13,278	17,300
San Bernardino Valley Municipal Water District														
Entitlement water	28	74	62	12	322	1,097	2,132	2,193	1,949	2,046	1,617	1,342	12,874	102,600
San Gabriel Valley Municipal Water District														
Entitlement water	0	0	775	383	2,016	2,798	2,801	2,714	2,995	3,312	206	0	18,000	28,800
San Gorgonio Pass Water Agency														
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	2,000
Ventura County Flood Control District														
Entitlement water	154	154	154	154	154	154	154	154	154	154	154	156	1,850	20,000
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	106	74	94	111	145	311	334	423	679	195	150	657	3,279	
SWP	39,931	34,186	69,580	97,564	110,305	89,804	98,466	102,531	95,878	139,843	94,815	112,079	1,084,982	
Non-SWP	0	12	0	1	0	0	0	0	0	0	0	0	13	
Southern California Area Total	39,931	34,198	69,580	97,565	110,305	89,804	98,466	102,531	95,878	139,843	94,815	112,079	1,084,995	2,507,200

Table 9-3 (Continued)
Water Delivered in 1999, by Month
(Acre-Feet)

Contracting Agency and Type of Service	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*1999 Total Deliveries*	*1999 Contract Entitlement*
SWP Water														
Long-Term Water Supply Contracts														
Agriculture and M&I entitlement water	58,639	45,717	79,591	113,819	186,947	268,247	386,457	350,001	203,138	236,729	142,442	139,421	2,211,148	4,116,646
Article 21 water and stored Article 21 water	28,555	27,220	72,886	29,233	0	0	0	0	0	0	0	0	157,894	
Article 21 unscheduled water	0	0	176	0	0	0	0	0	0	0	0	0	176	
Transfer entitlement water	106	88	83	87	1,144	1,164	19,448	23,184	147	124	54	72	45,701	
Exchange entitlement water	0	0	0	5,000	15,000	0	2,000	27,500	12,488	11,586	10,062	15,557	99,193	
Stored entitlement water	0	0	8,041	30,036	51,184	58,595	3,800	0	2,958	137	4,785	7,376	166,912	
Purchase Pool A entitlement water	0	0	0	0	0	8,449	19,831	10,890	21,374	1,027	5,812	9,572	76,955	
Purchase Pool B entitlement water	0	0	0	0	347	6,768	6,769	8,644	13,129	43,249	38,158	21,689	138,753	
Stored Pool B water	0	0	0	0	0	0	0	0	0	0	0	229	229	
Subtotal (*long-term water supply contracts*)	*87,300*	*73,025*	*160,777*	*178,175*	*254,622*	*343,223*	*438,305*	*420,219*	*253,234*	*292,852*	*201,313*	*193,916*	*2,896,961*	
Recreation/fish and wildlife water	139	102	117	160	210	466	466	579	832	321	203	729	4,324	
Total (SWP water)	***87,439***	***73,127***	***160,894***	***178,335***	***254,832***	***343,689***	***438,771***	***420,798***	***254,066***	***293,173***	***201,516***	***194,645***	***2,901,285***	
Non-SWP Water														
Other water														
Local water	24,853	3,373	2,452	29,644	198,444	174,422	206,656	175,204	74,543	81,189	87,760	73,161	1,131,701	
General wheeling	0	0	0	0	0	0	0	1,000	1,000	0	0	0	2,000	
Subtotal *(other water)*	*24,853*	*3,373*	*2,452*	*29,644*	*198,444*	*174,422*	*206,656*	*176,204*	*75,543*	*81,189*	*87,760*	*73,161*	*1,133,701*	
CVP Water														
Cross Valley Canal Contracts	0	0	0	0	0	0	0	0	0	9,000	10,375	0	19,375	
Annual Contracts	41	41	39	35	53	82	61	46	46	67	56	40	607	
USBR	254	16,281	0	0	645	61	4,699	3,401	6,481	7,739	0	0	39,561	
Recreation/fish and wildlife water (San Luis)	24	23	15	39	42	110	86	113	105	92	36	55	740	
Subtotal *(CVP water)*	*319*	*16,345*	*54*	*74*	*740*	*253*	*4,846*	*3,560*	*6,632*	*16,898*	*10,467*	*95*	*60,283*	
Total (Non-SWP water)	***25,172***	***19,718***	***2,506***	***29,718***	***199,184***	***174,675***	***211,502***	***179,764***	***82,175***	***98,087***	***98,227***	***73,256***	***1,193,984***	
Grand Total	**112,611**	**92,845**	**163,400**	**208,053**	**454,016**	**518,364**	**650,273**	**600,562**	**336,241**	**391,260**	**299,743**	**267,901**	**4,095,269**	**4,116,646**

Table 9-4
Total Amounts of Annual Water Entitlements and Water Conveyed, by Type, 1962-99
(Acre-Feet)

Year	Annual Entitlements According to Long-Term Water Supply Contracts							Water Conveyed								
								Deliveries								
	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 (8)	Article 21 [a] (9)	Other Water [b] (10)	Feather River Diversions [c] (11)	Wildlife/ Recreation Water (12)	Subtotal (13)	Initial Fill Water (14)	Losses and Storage Changes [d] (15)	Total (16)
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	77,350	0	3,700	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	163,075	0	5,000	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	202,000	0	5,700	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	251,800	0	6,700	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	413,066	0	209,423	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	383,652	0	481,100	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	460,650	0	597,920	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	545,809	0	714,950	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	543,417	0	836,480	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	581,400	0	954,901	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	635,900	0	1,049,584	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	702,685	0	1,190,573	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	758,100	1,946	1,317,614	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	818,000	2,813	1,432,065	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	876,500	5,626	1,550,449	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	867,118	8,439	1,681,257	2,701,164	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	979,211	12,698	1,744,098	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	1,019,049	21,138	1,864,849	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	1,091,946	28,210	1,983,890	3,257,736	1,995,636	36,620	193,606	791,737	3,865	3,021,464	0	284,380	3,305,844
1987	4,620	1,550	150,300	1,188,500	35,204	2,103,941	3,484,115	2,130,086	114,907	377,592	831,947	7,672	3,462,204	0	(390,413)	3,071,791
1988	5,060	15,471	152,500	1,246,100	43,722	2,225,482	3,688,335	2,385,122	0	507,076	794,834	4,889	3,691,921	0	(92,850)	3,599,071
1989	5,500	24,615	156,700	1,290,400	56,342	2,424,633	3,958,190	2,853,747	0	474,559	830,500	8,135	4,166,941	0	447,917	4,614,858
1990	6,040	28,190	160,900	1,313,450	70,486	2,500,600	4,079,666	2,582,151	90	424,697	875,099	9,262	3,891,299	0	(528,869)	3,362,430
1991	11,880	29,590	166,400	1,338,011	70,486	2,510,200	4,126,567	549,113	3,521	551,051	565,395	4,879	1,673,959	0	167,435	1,841,394
1992	11,920	32,010	171,900	1,342,300	70,486	2,510,200	4,138,816	1,471,454	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		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	1,749,351	112,625	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	1,967,093	64,330	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	2,514,825	28,647	251,391	934,997	3,907	3,733,767	86	491,550	4,225,403
1997	12,150	49,315	188,000	1,297,300	45,201	2,492,900	4,084,866	2,325,775	21,432	322,000	993,211	4,146	3,666,564	527	(11,806)	3,655,285
1998	12,200	50,420	188,000	1,272,300	45,201	2,517,900	4,086,021	1,725,519	20,288	134,682	872,738	2,108	2,755,335	0	(132,491)	2,622,844
1999	12,250	51,500	188,000	1,272,300	70,486	2,519,900	4,114,436	2,738,891	158,070	85,312	1,108,672	4,324	4,095,269	0	(189,525)	3,905,744
Total	165,090	453,401	4,696,638	28,259,919	870,428	49,459,509	83,904,985	48,693,882	6,303,497	6,871,592	26,353,862	119,023	88,341,856	1,834,310	45,950	90,222,116

[a] Includes 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). Surplus, extra surplus, unscheduled, and interruptible water are included.

[b] Includes water conveyed for SWP and non-SWP water contractors.

[c] Includes water diverted under various water rights agreements.

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

for delivery in 2000 due to maintenance and repair of the Aqueduct, which prevented delivery of this water to two contractors in 1999.

Water Delivered in 1999, by Month

During 1999, the SWP provided water service to 42 agencies, including 27 long-term water contractors. Those agencies and the amounts of water delivered to them by month are listed in Table 9-3.

This section and the accompanying table summarize water deliveries for 1999. Information about those deliveries is categorized as SWP water and non-project water.

State Water Project Water

SWP water is classified into the following categories:

Long-term water supply contracts
- current year entitlement
- Article 21
- transfer and exchange entitlement
- carryover entitlement
- stored
- turnback pools A and B entitlement

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.

In 1999, SWP water was delivered in the following classifications and amounts.

Entitlement Water. A total of 2,738,891 acre-feet of 1999 entitlement water was delivered to 27 long-term contractors.

Article 21 Water. A total of 158,070 acre-feet of Article 21 water was delivered in 1999.

Transfers and Exchanges of Entitlement Water. During 1999, a total of 144,894 acre-feet of entitlement water was transferred to or exchanged between SWP long-term contractors and non-SWP water agencies as follows:

- DRWD transferred to TLBWSD, 86 acre-feet
- KCWA exchanged with WWD, 20,423 acre-feet
- KCWA transferred to WWD, 40,776 acre-feet
- KCWA exchanged with TLBWSD, 9,000 acre-feet
- KCWA transferred to TLBWSD, 400 acre-feet
- TLBWSD transferred to WWD, 16,770 acre-feet
- TLBWSD exchanged with WWD, 20,000 acre-feet
- MWA transferred to AVEKWA, 1,439 acre-feet
- MWD exchanged with WWD, 33,000 acre-feet
- SCWA exchanged with MWA, 3,000 acre-feet

Other Exchanges of Entitlement Water. In 1999, nonproject water was exchanged for project water as follows.

U.S. Bureau of Reclamation. A water exchange between USBR and the Department was approved June 23, 1999. From July 1 through November 24, 1999, approximately 54 acre-feet were moved from the Sacramento River at the Colusa Bypass for an equivalent amount of SWP water from Lake Oroville. The exchange was made under the *Agreement between the United States of America and the Department of Water Resources of the State of California for Coordinated Operation of the Central Valley Project and the State Water Project*, dated November 24, 1986.

Carryover Entitlement Water. There was no 1998 entitlement water carried in SWP storage facilities for delivery in 1999.

Article 21 Water. The Article 21 water program allows a contractor to take delivery of water over the approved and scheduled allocations for the current year (for more information about Article 21 water, see page 114). Article 21 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 1999, eight contractors participated in the program. A total of 158,070 acre-feet of Article 21 water was delivered to NCFCWCD, EWSID, ACFCWCD-Zone 7, ACWD, SCVWD, DRWD, KCWA, TLBWSD, and MWD.

Water for Recreation and Fish and Wildlife. A total of 4,324 acre-feet of SWP water was conveyed for recreational use and enhancement of fish and wildlife.

Recreational Use. The SWP delivered 629 acre-feet of water for facilities at Lake Oroville, Lake Del Valle, O'Neill Forebay, Silverwood Lake, and Lake Perris. In addition, 2,865 acre-feet were delivered to Castaic Lake and Castaic Lagoon, an impoundment downstream from Castaic Lake devoted entirely to recreation.

Trout Fishery. The SWP released 18 acre-feet of water to maintain a trout fishery in Piru Creek as a condition of obtaining a license from the Federal Energy Regulatory Commission to develop a power plant at Pyramid Lake.

Wildlife Management. The SWP delivered 812 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 water released in 1999.

Non-State Water Project Water

In 1999, 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 1999. 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 1999, the Department conveyed 60,283 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 CVP as follows.

Cross Valley Canal Contractors. Under four individual agreements between the Department and LTRID, PID, RGWD, and KTWD dated December 21, 1999, the Department conveyed 6,340, 3,446, 3,634, and 5,955 acre-feet of CVP water for each district to WWD's turnouts in Reach 4 and Reach 5 of the California Aqueduct, respectively.

Friant Water Users Authority. Under an agreement dated September 24, 1999, the Department conveyed 12,804 acre-feet of CVP water from the San Luis Canal at Kettleman City to the CVC turnout at Tupman. The water was identified as exchange water. Conveyance will continue into 2000.

Musco Olive Products, Incorporated. In accordance with terms of a conveyance agreement with USBR, dated September 16, 1999, the Department conveyed 360 acre-feet of CVP water to Reach 2A of the California Aqueduct for Musco Olive Products, Inc.

Recreational and Wildlife Use. In 1999, the Department conveyed 740 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.

Tracy Golf and Country Club. Under an agreement with the Tracy Golf and Country Club, the Department conveyed 204 acre-feet of CVP water to the course for irrigation purposes. The agreement is expected to be executed in August 2000.

U.S. Bureau of Reclamation. Under an agreement, dated August 18, 1999, the Department conveyed 16,281 acre-feet of CVP water through the California Aqueduct to O'Neill Forebay to replace exports

forgone at the Tracy Pumping Plant in January due to fishery protections measures pursuant to Anadromous Fish Restoration Program Action No. 8.

U.S. Department of Veterans Affairs. Under an annual agreement with USBR, dated February 24, 1999, the Department conveyed 43 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 10,476 acre-feet of CVP water for 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.

Floodwater. Occasionally, during wet years, the Department accepts floodwater from the Kern River into the California Aqueduct through the Kern River-California Aqueduct 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 1999, the Department did not accept any floodwater into 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 1999, 1,131,701 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 1,108,672 acre-feet. Those agencies are

- Last Chance Creek Water District, 12,241 acre-feet
- Thermalito Irrigation District, 2,567 acre-feet
- Oroville-Wyandotte Irrigation District, 7,336 acre-feet
- Western Canal Water District, 326,611 acre-feet
- Joint Water District Board, 725,609 acre-feet
- Tudor Mutual Water Company, 4,572 acre-feet
- Oswald Water District, 1,722 acre-feet
- Garden Highway Water Company, 16,809 acre-feet
- Plumas Mutual Water Company, 11,205 acre-feet

South Bay Area. In the South Bay area, 23,016 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, 13 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 CLAWA.

Annual Water Entitlements and Water Delivered Since 1962

Information about annual water entitlements and water conveyed for the past 38 years is contained in Table 9-4. The following discussion of entitlements and water conveyed is arranged according to column numbers.

Annual Entitlements. Columns 1 through 7 of Table 9-4 show the amount of the long-term contractor's entitlement water by area for years 1962 through 1999 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 17 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 1999.

Article 21 Water. Article 21 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 Article 21 water, as defined under *SWP Deliveries* (see page 114), delivered from 1962 through 1999.

Column 10 includes amounts of water classified as other water delivered in 1999, including nonproject water conveyed through SWP facilities and regulated delivery of local supply.

In 1999, a total of 85,312 acre-feet of other water was delivered.

Feather River Diversions. Column 12 includes amounts of water from the Feather River delivered according to agreements for water rights water. In 1999, a total of 1,108,672 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 1999, a total of 4,324 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

Scenic overview of Devil Canyon
Power Plant near San Bernardino

Significant Events

- In 1999, the Oroville Relicensing Steering Committee recommended that the Department consider using the Federal Energy Regulatory Commission's Alternative Licensing Procedures, which encourage a collaborative stakeholder approach throughout the multiyear relicensing process.
- In 1999, energy used at the 25 State Water Project pumping and generating plants totaled 5.76 billion kWh.
- In 1999, the Department sold 4.23 billion kWh of energy to 27 utilities and 13 power marketers for total revenues of $104.15 million. The Department also received $22.36 million from capacity sales, exchanges, and transmission arrangements. The combined revenue received was $126.5 million.
- In 1999, the Department became involved in a record number of proceedings and dockets before FERC, as the new California Independent System Operator Corporation and California Power Exchange introduced numerous market modifications in an effort to transition from startup to stable conditions.

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 that allow the Department to operate SWP pumps independently of water delivery needs. This control of pumping loads and generation allows the Department to enter into advantageous agreements with other electric utilities that 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.

The 1996 summer outages on the western grid focused attention on the need to take additional steps to ensure the reliability of the western interconnected grid. To address these concerns and ensure reliability, WSCC developed the voluntary Reliability Management System Program and implemented it in September 1999.

The RMS criteria are based on existing WSCC and FERC reliability criteria, and participants are subject to sanctions for noncompliance. Currently there is no legal authority to require any entity to participate in a mandatory reliability program with sanctions.

The Department is not currently an RMS signatory, but voluntarily submits Automatic Voltage Regulator and Power System Stabilizer data to WSCC and is considering signing the RMS agreement.

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 an application to FERC by January 31, 2005. Due to the intense interest in issues examined during relicensing processes, 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 who 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.

In 1999, the Steering Committee recommended that the Department consider using FERC's Alternative Licensing Procedures, which encourage a collaborative stakeholder approach throughout the multiyear relicensing process. FERC offers three relicensing procedures—traditional, hybrid, and alternative—that allow applicants to accommodate their unique interests and operations while seeking a license renewal. The traditional process involves minimal FERC involvement while the alternative procedures allow for more FERC involvement and stakeholder interaction.

Potential Sale of Reid Gardner Unit 4

In early 1998, the Nevada Power Company 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 power plant. NPC asked the Department to also sell its share. In 1999, the Department considered that request and evaluated the advantages, disadvantages, and the fair market price for the power plant and the allocation of sale proceeds between the Department and NPC.

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 of the investor-owned utilities (Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company), the utilities 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, ISO and CalPX began operation. ISO manages most of California's transmission grid and is responsible for overall system reliability. Scheduling coordinators were created to submit energy schedules to ISO. All loads and resources within the ISO-controlled grid, and resources imported or exported within California, must schedule through these coordinators. ISO operates the following three markets:

- ancillary services market, which consists of regulation, spinning, nonspinning, replacement reserves, voltage support, and black start. 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 adjusting generation to match constantly changing loads and system losses.

CalPX schedules the loads and resources to ISO as the scheduling coordinator for the three investor-owned utilities. CalPX also operates the day-ahead market and the hour-ahead market for the purchase and sale of energy by other market participants.

In 1998, the Department signed numerous agreements to participate in ISO and CalPX markets, including the following agreements with ISO: (1) Scheduling Coordinator Agreement, (2) Meter Service Agreement for Scheduling Coordinators, (3) Participating Generator Agreement, and (4) Meter Service Agreement for ISO Metered Entities. The

Department also signed the PX Participation Agreement with CalPX.

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

- development of ISO's transmission access charge and off-peak rates;
- conversion of existing transmission contracts to ISO service and receipt of financial and physical transmission rights from ISO as compensation;
- 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;
- numerous ISO and CalPX tariff amendments filed with FERC, covering operational issues discovered during ISO and CalPX operations;
- redesign of the ISO's Ancillary Services markets to increase participation, reduce costs, and provide for proper cost allocation;
- revision of Reliability Must-Run contracts to reduce costs and prevent gaming by owners;
- firm transmission rights auction to purchase firm transmission capacity on congested interzonal and intertie transmission paths;
- creation of a new congestion zone to address congestion within Path 26;
- formulation of a price cap policy to eventually end the use of price caps by establishing market mechanisms to encourage competition; and
- preliminary discussions for redesign of ISO markets in 2000 to encourage accurate scheduling, increase participation by load, reduce congestion, and allow more market activity.

The Department sells spinning, nonspinning, and replacement reserves to ISO. The Department bids pump loads into nonspinning reserves to provide ISO more resources in case of system emergencies or contingencies. The Department buys and sells 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 nameplate capacity of the Department's primary power facilities.

Hydroelectric. Economic hydroelectric generation provides the largest share of SWP power resources. The combined 759-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 Power Plant 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 Power Plant, a coal-fired facility near Las Vegas, Nevada. Reid Gardner consists of four units. The Department owns 67.8 percent of Unit 4, 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 249 MW (entitlement share of 90.4 percent) 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.

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

Figure 10-1
Names, Locations, and Nameplate Capacity of Primary Power Facilities

- availability and cost of financing
- environmental impacts and costs of mitigation
- operating characteristics

The Department continues to consider several potential power resources. These include a second unit at Alamo Power Plant, a third unit at Warne Power Plant, 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. LADWP constructed and operates Castaic Power Plant, which is 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 Power Plant Units 1 and 2
- 15 MW of capacity and all the energy generated by Alamo Power Plant

In return, the Department receives off-peak energy from SCE equal to the amount of energy provided to SCE from Hyatt-Thermalito, Devil Canyon Power Plant, and Alamo Power Plant, 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 as 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 power plants—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 Power Plant, 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. The Department terminated the contract in early 1996 due to a contract breach by TERA Power Corporation and proposed dismantling and removing 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 open 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. In 1999, the Department also bought and sold through the CalPX market excess energy not sold through bilateral agreements.

SWP Power Operation in 1999

Tables 10-1 through 10-4 present statistical information about SWP power operation for calendar year 1999, including energy consumed and generated, energy exchanged and purchased, and energy sold.

Energy Consumed

In 1999, energy used at the 25 SWP pumping and generating plants totaled 5.76 billion kWh.

Table 10-1 shows the amount of energy used each month at SWP pumping and generating plants to operate the SWP in 1999.

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 1999, 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 1999, Hyatt-Thermalito generated 2.95 billion kWh of energy.

Energy generated at SWP recovery plants—Alamo, Devil Canyon, Castaic, Mojave Siphon, and Warne—totaled 1.32 billion kWh in 1999.

In 1999, the SWP share of energy generated at the coal-fired Reid Gardner Unit 4 totaled 1.6 billion kWh of energy.

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 1999, LADWP provided 372 million kWh of energy for the Department's share of energy generated at Castaic Power Plant.

Table 10-1
Energy Used at Pumping Plants and Power Plants in 1999, by Month
(Millions of Kilowatt-Hours)

Pumping Plants and Power Plants	*Month*												*Total*
	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	
Hyatt-Thermalito Pumping-Generating Plant (pumpback and station service)	0.064	0.003	0.021	0.008	0.022	0.287	0.000	0.188	27.302	0.796	8.158	8.213	45.063
North Bay Interim Pumping Plant	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.014
Cordelia Pumping Plant	0.962	0.555	0.360	0.227	0.671	0.736	0.941	0.877	0.683	0.769	0.897	1.015	8.694
Barker Slough Pumping Plant	0.471	0.250	0.165	0.134	0.525	0.742	1.188	1.138	0.941	0.988	0.635	0.750	7.929
South Bay Pumping Plant	4.923	4.785	3.355	3.659	5.636	8.702	12.532	13.731	12.886	9.506	5.722	9.546	94.982
Bottle Rock Power Plant (station service)	0.059	0.053	0.057	0.049	0.044	0.034	0.037	0.033	0.032	0.028	0.034	0.044	0.503
Del Valle Pumping Plant	0.030	0.101	0.007	0.007	0.008	0.011	0.017	0.011	0.010	0.029	0.006	0.104	0.342
Banks Pumping Plant	24.517	10.299	51.726	52.528	28.117	17.678	107.925	116.998	116.204	83.568	85.644	67.312	762.516
Gianelli Pumping-Generating Plant (SWP share)	15.628	(0.179)	0.005	1.258	0.093	0.047	3.547	16.056	34.128	11.525	35.280	25.203	142.592
Dos Amigos Pumping Plant (SWP share)	5.816	4.768	29.188	30.438	31.785	49.001	59.532	55.366	33.279	40.755	25.390	23.582	388.900
Buena Vista Pumping Plant	2.605	2.677	30.374	25.885	20.338	24.761	33.394	31.883	27.828	35.673	19.751	30.499	285.669
Teerink Pumping Plant	1.579	1.175	31.250	26.873	19.067	22.062	31.426	31.128	29.257	38.378	21.537	33.280	287.012
Chrisman Pumping Plant	3.551	2.504	71.659	61.505	41.221	47.088	68.611	69.537	66.658	87.611	49.522	77.568	647.035
Edmonston Pumping Plant	10.020	7.195	256.015	218.726	141.398	159.864	237.167	243.317	232.834	308.990	176.248	278.124	2,269.898
Alamo Power Plant (station service)	0.065	0.075	0.018	0.014	0.027	0.027	0.027	0.024	0.022	0.015	0.047	0.024	0.385
Pearblossom Pumping Plant	2.017	0.498	28.025	23.497	22.503	31.371	43.471	40.065	39.837	49.516	7.380	50.847	339.027
Pine Flat Power Plant (station service)	0.176	0.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.087	0.001	0.193	0.683
Mojave Siphon Power Plant (station service)	0.083	0.083	0.030	0.029	0.032	0.014	0.002	0.000	0.000	0.001	0.054	0.002	0.328
Devil Canyon Power Plant (station service)	0.314	0.192	0.180	0.178	0.150	0.094	0.094	0.095	0.094	0.092	0.103	0.069	1.654
Oso Pumping Plant	0.282	0.497	17.478	14.775	4.818	3.092	6.653	9.051	8.527	13.951	16.992	11.679	107.796
Warne Power Plant (station service)	0.136	0.124	0.149	0.147	0.443	0.478	0.236	0.099	0.000	0.015	0.023	0.023	1.874
Las Perillas Pumping Plant	0.285	0.412	0.621	0.744	1.099	1.546	1.701	1.299	0.777	0.574	0.218	0.319	9.596
Badger Hill Pumping Plant	0.741	1.112	1.691	2.035	3.070	4.242	4.626	3.657	2.199	1.544	0.557	0.759	26.232
Devil's Den Pumping Plant	0.879	0.827	1.071	1.109	1.737	1.680	2.164	1.978	1.913	1.698	0.988	1.161	17.203
Bluestone Pumping Plant	0.924	0.857	1.092	1.152	1.798	1.739	2.229	2.016	1.806	1.602	0.934	1.091	17.241
Polonio Pass Pumping Plant	0.898	0.845	1.082	1.129	1.762	1.705	2.189	2.001	1.936	1.724	1.005	1.184	17.461
Subtotal	*77.026*	*39.934*	*525.621*	*466.107*	*326.367*	*377.002*	*619.712*	*640.550*	*639.154*	*689.438*	*457.129*	*622.589*	*5,480.630*
Deviation Adjustments	14.968	2.853	21.347	9.360	14.807	14.777	26.441	32.474	21.534	12.567	9.746	96.020	276.895
Total Energy Required for SWP	**91.995**	**42.787**	**546.968**	**475.467**	**341.174**	**391.779**	**646.154**	**673.024**	**660.688**	**702.005**	**466.876**	**718.609**	**5,757.525**

Table 10-2
Energy Generated and Purchased in 1999, by Month
(Millions of Kilowatt-Hours)

Sources of Energy	Month												Total
	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	
SWP Energy Sources													
Hyatt-Thermalito Power Plant	268.034	457.775	307.517	157.986	210.662	191.981	465.021	280.865	164.538	152.924	127.640	162.475	2,947.416
Gianelli Pumping-Generating Plant (SWP share)	0.629	0.455	8.625	14.448	37.751	66.801	16.558	15.049	0.296	11.001	1.548	9.403	182.564
Alamo Power Plant	0.436	0.000	5.639	4.681	5.123	6.414	7.590	7.402	7.631	9.084	1.547	6.539	62.086
Mojave Siphon Power Plant	0.117	0.000	3.243	2.769	2.675	3.766	5.262	4.777	4.716	5.539	0.892	6.461	40.217
Devil Canyon Power Plant	18.266	5.991	33.623	41.835	43.930	55.376	75.725	74.840	69.020	84.935	40.868	64.879	609.288
Reid Gardner Unit 4[a]	142.363	114.744	135.973	163.116	22.241	113.334	145.007	138.852	170.146	150.882	155.265	143.775	1,595.698
Warne Power Plant	0.000	0.024	38.755	32.307	10.360	6.663	15.047	20.529	19.346	30.260	37.156	25.912	236.359
Subtotal	*429.844*	*578.989*	*533.375*	*417.142*	*332.742*	*444.335*	*730.210*	*542.313*	*435.694*	*444.626*	*364.916*	*419.443*	*5,673.629*
Energy Sources from Long-Term Agreements													
Castaic Power Plant (SWP share)	0.432	0.000	56.160	45.040	15.944	9.600	23.656	32.520	29.400	49.853	65.040	44.640	372.285
Metropolitan Water District of Southern California	8.249	8.365	9.131	12.880	10.310	11.878	14.805	14.922	14.040	13.755	12.767	15.389	146.492
Pine Flat Power Plant KRCD	2.255	0.174	18.949	22.192	68.531	110.170	107.421	48.745	14.751	1.238	0.000	0.000	394.427
Energy to MWD for CRA Pumping	0.000	0.000	0.000	0.000	1.980	0.000	0.000	3.244	0.000	0.000	0.000	1.816	7.040
Energy from MWD for CRA Pumping	0.000	(6.160)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(0.880)	0.000	(7.040)
Power Exchange delivered to other entities[b]	0.000	0.000	0.000	(4.272)	(4.030)	(17.115)	(56.224)	(56.286)	(67.700)	(114.055)	(178.860)	(158.219)	(656.761)
Power Exchange received from other entities[b]	0.000	0.000	0.000	4.272	4.030	17.115	56.224	56.286	67.700	114.142	179.681	157.353	656.803
Power Exchange delivered to SCE	(151.702)	(221.521)	(196.871)	(134.399)	(166.802)	(170.074)	(324.285)	(246.673)	(176.592)	(193.501)	(134.906)	(157.864)	(2,275.190)
Power Exchange received from SCE	207.287	188.836	335.525	342.202	209.446	167.446	358.988	511.117	507.939	499.236	506.031	612.489	4,446.542
Power System Imbalances	(0.207)	0.690	0.000	(0.578)	0.000	0.004	0.000	0.016	0.000	0.000	0.000	0.000	(0.075)
Subtotal	*66.314*	*(29.616)*	*222.894*	*287.337*	*139.409*	*129.024*	*180.585*	*363.892*	*389.538*	*370.668*	*448.873*	*515.604*	*3,084.523*
Purchases													
Bonneville Power Administration	0.000	0.000	19.140	0.000	0.000	0.000	7.600	0.000	0.000	0.000	0.000	0.000	26.740
City & County of San Francisco	0.000	0.000	0.360	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.360
Duke/Louis Dreyfuss, LLC	0.000	0.000	0.000	26.640	40.000	54.400	38.000	41.364	40.412	0.000	1.325	108.288	350.429
Modesto Irrigation District	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.633	0.000	0.000	0.000	0.633
MIECO, INC.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.925	0.000	0.000	0.000	4.925
PacifiCorp	49.200	48.000	53.172	51.640	50.000	52.000	52.000	51.410	50.400	51.913	50.379	54.304	614.418
Portland General Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.600	0.000	0.000	0.000	1.600
Pacific Gas & Electric Energy Trading	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.400	0.000	0.000	8.400
Puget Sound Energy	0.000	0.000	0.000	3.200	0.000	0.000	0.000	0.000	0.000	0.000	2.500	0.000	5.700
Powerex	0.000	0.000	0.000	0.000	0.000	29.600	0.000	0.000	0.000	0.000	0.000	0.000	29.600
California Power Exchange	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.924	49.101	14.686	37.240	101.951
Seattle City Light	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.400	0.000	2.400
Sempra Energy Trading, Inc.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	40.000	42.500	82.500
Sacramento Municipal Utility District	0.000	0.000	0.000	0.000	0.000	0.000	0.800	0.000	0.000	0.000	0.100	0.000	0.900
Williams Energy Services Company	0.000	0.000	0.216	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.216
Subtotal	*49.200*	*48.000*	*72.888*	*81.480*	*90.000*	*136.000*	*98.400*	*92.774*	*98.894*	*109.414*	*111.390*	*242.332*	*1,230.772*
Subtotal	*115.514*	*18.384*	*295.782*	*368.817*	*229.409*	*265.024*	*278.985*	*456.666*	*488.432*	*480.082*	*560.263*	*757.936*	*4,315.295*
Total Resources	545.359	597.373	829.157	785.959	562.151	709.359	1,009.195	998.979	924.126	924.708	925.180	1,177.379	9,988.924
Less Energy Sales	(453.364)	(554.586)	(282.189)	(310.492)	(220.977)	(317.580)	(363.041)	(325.955)	(263.438)	(222.703)	(458.304)	(458.770)	(4,231.399)
Total Energy Provided to the SWP[c]	**91.995**	**42.787**	**546.968**	**475.467**	**341.174**	**391.779**	**646.154**	**673.024**	**660.688**	**702.005**	**466.876**	**718.609**	**5,757.525**

[a] Total upgrade energy of 68,171 MWh from Reid Gardner Unit 4 is included.

[b] Power exchanged with AZUSA, DETM, MIECO, PG&E, SCE, SETC, SETMI, SMUD, and WESC.

[c] Amounts show actual energy available for SWP use.

Table 10-1
Energy Used at Pumping Plants and Power Plants in 1999, by Month
(Millions of Kilowatt-Hours)

Pumping Plants and Power Plants	*Month*												*Total*
	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	
Hyatt-Thermalito Pumping-Generating Plant (pumpback and station service)	0.064	0.003	0.021	0.008	0.022	0.287	0.000	0.188	27.302	0.796	8.158	8.213	45.063
North Bay Interim Pumping Plant	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.014
Cordelia Pumping Plant	0.962	0.555	0.360	0.227	0.671	0.736	0.941	0.877	0.683	0.769	0.897	1.015	8.694
Barker Slough Pumping Plant	0.471	0.250	0.165	0.134	0.525	0.742	1.188	1.138	0.941	0.988	0.635	0.750	7.929
South Bay Pumping Plant	4.923	4.785	3.355	3.659	5.636	8.702	12.532	13.731	12.886	9.506	5.722	9.546	94.982
Bottle Rock Power Plant (station service)	0.059	0.053	0.057	0.049	0.044	0.034	0.037	0.033	0.032	0.028	0.034	0.044	0.503
Del Valle Pumping Plant	0.030	0.101	0.007	0.007	0.008	0.011	0.017	0.011	0.010	0.029	0.006	0.104	0.342
Banks Pumping Plant	24.517	10.299	51.726	52.528	28.117	17.678	107.925	116.998	116.204	83.568	85.644	67.312	762.516
Gianelli Pumping-Generating Plant (SWP share)	15.628	(0.179)	0.005	1.258	0.093	0.047	3.547	16.056	34.128	11.525	35.280	25.203	142.592
Dos Amigos Pumping Plant (SWP share)	5.816	4.768	29.188	30.438	31.785	49.001	59.532	55.366	33.279	40.755	25.390	23.582	388.900
Buena Vista Pumping Plant	2.605	2.677	30.374	25.885	20.338	24.761	33.394	31.883	27.828	35.673	19.751	30.499	285.669
Teerink Pumping Plant	1.579	1.175	31.250	26.873	19.067	22.062	31.426	31.128	29.257	38.378	21.537	33.280	287.012
Chrisman Pumping Plant	3.551	2.504	71.659	61.505	41.221	47.088	68.611	69.537	66.658	87.611	49.522	77.568	647.035
Edmonston Pumping Plant	10.020	7.195	256.015	218.726	141.398	159.864	237.167	243.317	232.834	308.990	176.248	278.124	2,269.898
Alamo Power Plant (station service)	0.065	0.075	0.018	0.014	0.027	0.027	0.027	0.024	0.022	0.015	0.047	0.024	0.385
Pearblossom Pumping Plant	2.017	0.498	28.025	23.497	22.503	31.371	43.471	40.065	39.837	49.516	7.380	50.847	339.027
Pine Flat Power Plant (station service)	0.176	0.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.087	0.001	0.193	0.683
Mojave Siphon Power Plant (station service)	0.083	0.083	0.030	0.029	0.032	0.014	0.002	0.000	0.000	0.001	0.054	0.002	0.328
Devil Canyon Power Plant (station service)	0.314	0.192	0.180	0.178	0.150	0.094	0.094	0.095	0.094	0.092	0.103	0.069	1.654
Oso Pumping Plant	0.282	0.497	17.478	14.775	4.818	3.092	6.653	9.051	8.527	13.951	16.992	11.679	107.796
Warne Power Plant (station service)	0.136	0.124	0.149	0.147	0.443	0.478	0.236	0.099	0.000	0.015	0.023	0.023	1.874
Las Perillas Pumping Plant	0.285	0.412	0.621	0.744	1.099	1.546	1.701	1.299	0.777	0.574	0.218	0.319	9.596
Badger Hill Pumping Plant	0.741	1.112	1.691	2.035	3.070	4.242	4.626	3.657	2.199	1.544	0.557	0.759	26.232
Devil's Den Pumping Plant	0.879	0.827	1.071	1.109	1.737	1.680	2.164	1.978	1.913	1.698	0.988	1.161	17.203
Bluestone Pumping Plant	0.924	0.857	1.092	1.152	1.798	1.739	2.229	2.016	1.806	1.602	0.934	1.091	17.241
Polonio Pass Pumping Plant	0.898	0.845	1.082	1.129	1.762	1.705	2.189	2.001	1.936	1.724	1.005	1.184	17.461
Subtotal	*77.026*	*39.934*	*525.621*	*466.107*	*326.367*	*377.002*	*619.712*	*640.550*	*639.154*	*689.438*	*457.129*	*622.589*	*5,480.630*
Deviation Adjustments	14.968	2.853	21.347	9.360	14.807	14.777	26.441	32.474	21.534	12.567	9.746	96.020	276.895
Total Energy Required for SWP	**91.995**	**42.787**	**546.968**	**475.467**	**341.174**	**391.779**	**646.154**	**673.024**	**660.688**	**702.005**	**466.876**	**718.609**	**5,757.525**

Table 10-2
Energy Generated and Purchased in 1999, by Month
(Millions of Kilowatt-Hours)

Sources of Energy	Month												Total
	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	
SWP Energy Sources													
Hyatt-Thermalito Power Plant	268.034	457.775	307.517	157.986	210.662	191.981	465.021	280.865	164.538	152.924	127.640	162.475	2,947.416
Gianelli Pumping-Generating Plant (SWP share)	0.629	0.455	8.625	14.448	37.751	66.801	16.558	15.049	0.296	11.001	1.548	9.403	182.564
Alamo Power Plant	0.436	0.000	5.639	4.681	5.123	6.414	7.590	7.402	7.631	9.084	1.547	6.539	62.086
Mojave Siphon Power Plant	0.117	0.000	3.243	2.769	2.675	3.766	5.262	4.777	4.716	5.539	0.892	6.461	40.217
Devil Canyon Power Plant	18.266	5.991	33.623	41.835	43.930	55.376	75.725	74.840	69.020	84.935	40.868	64.879	609.288
Reid Gardner Unit 4[a]	142.363	114.744	135.973	163.116	22.241	113.334	145.007	138.852	170.146	150.882	155.265	143.775	1,595.698
Warne Power Plant	0.000	0.024	38.755	32.307	10.360	6.663	15.047	20.529	19.346	30.260	37.156	25.912	236.359
Subtotal	*429.844*	*578.989*	*533.375*	*417.142*	*332.742*	*444.335*	*730.210*	*542.313*	*435.694*	*444.626*	*364.916*	*419.443*	*5,673.629*
Energy Sources from Long-Term Agreements													
Castaic Power Plant (SWP share)	0.432	0.000	56.160	45.040	15.944	9.600	23.656	32.520	29.400	49.853	65.040	44.640	372.285
Metropolitan Water District of Southern California	8.249	8.365	9.131	12.880	10.310	11.878	14.805	14.922	14.040	13.755	12.767	15.389	146.492
Pine Flat Power Plant KRCD	2.255	0.174	18.949	22.192	68.531	110.170	107.421	48.745	14.751	1.238	0.000	0.000	394.427
Energy to MWD for CRA Pumping	0.000	0.000	0.000	0.000	1.980	0.000	0.000	3.244	0.000	0.000	0.000	1.816	7.040
Energy from MWD for CRA Pumping	0.000	(6.160)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(0.880)	0.000	(7.040)
Power Exchange delivered to other entities[b]	0.000	0.000	0.000	(4.272)	(4.030)	(17.115)	(56.224)	(56.286)	(67.700)	(114.055)	(178.860)	(158.219)	(656.761)
Power Exchange received from other entities[b]	0.000	0.000	0.000	4.272	4.030	17.115	56.224	56.286	67.700	114.142	179.681	157.353	656.803
Power Exchange delivered to SCE	(151.702)	(221.521)	(196.871)	(134.399)	(166.802)	(170.074)	(324.285)	(246.673)	(176.592)	(193.501)	(134.906)	(157.864)	(2,275.190)
Power Exchange received from SCE	207.287	188.836	335.525	342.202	209.446	167.446	358.988	511.117	507.939	499.236	506.031	612.489	4,446.542
Power System Imbalances	(0.207)	0.690	0.000	(0.578)	0.000	0.004	0.000	0.016	0.000	0.000	0.000	0.000	(0.075)
Subtotal	*66.314*	*(29.616)*	*222.894*	*287.337*	*139.409*	*129.024*	*180.585*	*363.892*	*389.538*	*370.668*	*448.873*	*515.604*	*3,084.523*
Purchases													
Bonneville Power Administration	0.000	0.000	19.140	0.000	0.000	0.000	7.600	0.000	0.000	0.000	0.000	0.000	26.740
City & County of San Francisco	0.000	0.000	0.360	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.360
Duke/Louis Dreyfuss, LLC	0.000	0.000	0.000	26.640	40.000	54.400	38.000	41.364	40.412	0.000	1.325	108.288	350.429
Modesto Irrigation District	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.633	0.000	0.000	0.000	0.633
MIECO, INC.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.925	0.000	0.000	0.000	4.925
PacifiCorp	49.200	48.000	53.172	51.640	50.000	52.000	52.000	51.410	50.400	51.913	50.379	54.304	614.418
Portland General Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.600	0.000	0.000	0.000	1.600
Pacific Gas & Electric Energy Trading	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.400	0.000	0.000	8.400
Puget Sound Energy	0.000	0.000	0.000	3.200	0.000	0.000	0.000	0.000	0.000	0.000	2.500	0.000	5.700
Powerex	0.000	0.000	0.000	0.000	0.000	29.600	0.000	0.000	0.000	0.000	0.000	0.000	29.600
California Power Exchange	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.924	49.101	14.686	37.240	101.951
Seattle City Light	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.400	0.000	2.400
Sempra Energy Trading, Inc.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	40.000	42.500	82.500
Sacramento Municipal Utility District	0.000	0.000	0.000	0.000	0.000	0.000	0.800	0.000	0.000	0.000	0.100	0.000	0.900
Williams Energy Services Company	0.000	0.000	0.216	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.216
Subtotal	*49.200*	*48.000*	*72.888*	*81.480*	*90.000*	*136.000*	*98.400*	*92.774*	*98.894*	*109.414*	*111.390*	*242.332*	*1,230.772*
Subtotal	*115.514*	*18.384*	*295.782*	*368.817*	*229.409*	*265.024*	*278.985*	*456.666*	*488.432*	*480.082*	*560.263*	*757.936*	*4,315.295*
Total Resources	545.359	597.373	829.157	785.959	562.151	709.359	1,009.195	998.979	924.126	924.708	925.180	1,177.379	9,988.924
Less Energy Sales	(453.364)	(554.586)	(282.189)	(310.492)	(220.977)	(317.580)	(363.041)	(325.955)	(263.438)	(222.703)	(458.304)	(458.770)	(4,231.399)
Total Energy Provided to the SWP[c]	**91.995**	**42.787**	**546.968**	**475.467**	**341.174**	**391.779**	**646.154**	**673.024**	**660.688**	**702.005**	**466.876**	**718.609**	**5,757.525**

[a] Total upgrade energy of 68,171 MWh from Reid Gardner Unit 4 is included.

[b] Power exchanged with AZUSA, DETM, MIECO, PG&E, SCE, SETC, SETMI, SMUD, and WESC.

[c] Amounts show actual energy available for SWP use.

Table 10-3
Power, Transmission, and Other Services Purchased in 1999 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	26,740,000	373,620.00		373,620.00
PacifiCorp	Firm and nonfirm energy	614,418,000	9,177,322.15		9,177,322.15
	Capacity			21,168,000.00	21,168,000.00
BC Hydro, Powerex	Firm and nonfirm energy	29,600,000	295,260.00		295,260.00
Northern California Area					
Kings River Conservation District	Hydroelectric energy	394,423,560	2,997,619.06		2,997,619.06
Sacramento Municipal Utility District	Firm and nonfirm energy	900,000	48,200.00		48,200.00
Southern California Area					
Metropolitan Water District of Southern California	Hydroelectric energy	137,391,014	5,860,712.46		5,860,712.46
California Power Exchange	Firm energy	101,951,000	1,267,698.58		1,267,698.58
Energy Marketers	Firm and nonfirm energy	457,163,000	11,090,239.60		11,090,239.60
Subtotal		*1,762,586,574*	*31,110,671.85*	*21,168,000.00*	*52,278,671.85*
Transmission and Other Purchases					
California Independent System Operator	Ancillary and other services				17,474,356.83
Kings River Conservation District	Pine Flat operation and maintenance				3,269,610.00
	Pine Flat debt service				5,234,692.56
Los Angeles Department of Water and Power	Hydro power plant scheduling				1,150.00
Nevada Power Company	Reid Gardner Unit 4 firm transmission				2,236,356.96
	Operations and maintenance				19,165,740.00
	Coal and diesel fuel				23,465,687.00
	Insurance				306,414.00
	Property taxes				1,405,596.00
	Upgrade energy	6,545,000	167,102.30		167,102.30
Pacific Gas and Electric Company	EHV transmission				1,500,000.00
	Midway-Wheeler Ridge, transmission operation and maintenance				132,864.00
	Bottle Rock transmission				27,843.93
	Backbone transmission				8,780,156.25
	Table Mountain–Tesla line credit				-2,883,247.76
	Pine Flat firm and additions				327,498.66
	Castle Rock–Lakeville Line: Ownership charges				97,873.02
	Coastal Branch—ownership charge				585,779.00
	TERA operation and maintenance				3,842.57
Southern California Edison Company	Firm transmission—power contracts				10,675,560.00
	Capacity exchange agreement transmission credit				-7,756,200.00
	Additional facilities charges (D.C. and Mojave)				1,259,927.04
	Independent System Operator GMC charges—Vincent to Mead				94,902.70
	Southern California Edison share of Oroville entitlement to ISO				388,381.89
	Scheduling and dispatching				34,049.40
FERC charges for Oroville, Pine Flat, and southern facilities					432,288.37
Other FERC charges					114,426.71
Subtotal		*6,545,000*	*167,102.30*		*86,542,651.43*
Total		**1,769,131,574**	**31,277,774.15**	**21,168,000.00**	**138,821,323.28**

Table 10-4
Energy Sold in 1999 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				
Bonneville Power Administration	80,000	1,200.00		1,200.00
Idaho Power Company	2,341,000	96,302.00		96,302.00
PacifiCorp	42,094,000	929,982.00		929,982.00
Portland General Electric Company	9,170,000	176,229.00		176,229.00
Puget Sound Power and Light Company	33,057,000	690,193.25		690,193.25
Seattle City Light	2,513,000	43,492.00		43,492.00
Northern California Area				
CAISO—Ancillary and Other Services			18,912,069.16	18,912,069.16
City and County of San Francisco	116,216,000	3,607,851.25		3,607,851.25
City of Redding	5,150,000	159,627.50		159,627.50
City of Santa Clara	1,357,000	26,916.00	18,388.26	45,304.26
Lassen Municipal Utility District	3,160,000	63,546.07		63,546.07
Modesto Irrigation District	42,453,000	781,994.75		781,994.75
Northern California Power Agency	118,419,000	2,452,275.05	92,956.08	2,545,231.13
Sacramento Municipal Utility District	282,825,000	7,790,779.02		7,790,779.02
Western Area Power Administration, Mid-Pacific	5,280,000	184,800.00		184,800.00
Southern California Area				
California Power Exchange	1,195,316,000	28,000,268.12		28,000,268.12
City of Azusa	26,123,000	861,953.39		861,953.39
City of Glendale	30,930,000	671,937.75		671,937.75
City of Pasadena	12,609,000	325,998.75		325,998.75
City of Riverside	101,454,000	2,608,087.51	1,261,200.00	3,869,287.51
City of Vernon	114,264,000	2,769,524.15		2,769,524.15
Los Angeles Department of Water and Power	87,156,000	1,303,421.00	594,000.00	1,897,421.00
Metropolitan Water District of Southern California	13,572,000	906,375.93		906,375.93
San Diego Gas and Electric Company	550,000	13,750.00		13,750.00
San Bernardino Valley Municipal Water District	321,000	11,347.77 [a]		11,347.77
Southwest Area				
Arizona Public Service	150,008,000	2,732,082.00		2,732,082.00
Nevada Power Company	452,304,000	11,316,308.10	1,468,354.20	12,784,662.30
Salt River Project	55,465,000	1,201,412.94		1,201,412.94
Miscellaneous			10,433.33	10,433.33
Energy Marketers				
Thirteen marketers	1,327,533,000	34,419,680.69		34,419,680.69
Total	**4,231,720,000**	**104,147,335.99**	**22,357,401.03**	**126,504,737.02**

[a] Received from San Bernardino Valley Municipal Water District due to generation lost by Southern California Edison which was replaced by the Department.

In 1999, the Department's share of Gianelli Pumping-Generating Plant used 143 million kWh and generated 183 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 Devil Canyon Power Plant and the Hyatt-Thermalito complex and all output of Alamo Power Plant 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 2.17 billion kWh of energy to the SWP in 1999.

Purchases and Costs. In 1999, the Department purchased 1.77 billion kWh of energy at a cost of $31.28 million. Associated costs for capacity totaled $21.17 million. Other SWP power costs, including transmission, operation, maintenance, and ISO ancillary services totaled $86.54 million. This amount includes $5.23 million and $3.27 million for debt service and operations and maintenance costs, respectively, at Pine Flat Power Plant. It also includes $46.6 million for costs associated with operations and maintenance, fuel, insurance, and property taxes at Reid Gardner Unit 4. Table 10-3 shows amounts of power, transmission, and other services purchased in 1999 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 ancillary services charges.

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 Power Plant. In 1999, the power plant provided 394.42 million kWh of energy to the SWP at a total cost of $11.50 million.

In 1999, the Department purchased 614.42 million kWh of energy at a cost of $30.35 million, under a contract for firm energy with PacifiCorp.

Under the MWD Small Hydro Contract, the Department purchased 137.39 million kWh of energy in 1999 from five small hydroelectric power plants on the MWD system at a cost of $5.86 million.

Long-term purchases are shown in Table 10-3.

Short-Term Purchases. Existing resources and long-term power and transmission contracts ensure that the SWP has enough power to meet long-term needs. When SWP power requirements exceed resources during daily operations, short-term purchases meet the difference. In 1999, the SWP purchased short-term energy from 10 marketers. The short-term energy purchases totaled 457.16 million kWh (Table 10-3).

Sales of Excess Power

In 1999, the Department sold 4.23 billion kWh of energy to 27 utilities and 13 power marketers for total revenues of $104.15 million. The Department also received $22.36 million in revenues for capacity, exchanges, and transmission arrangements, including $18.91 million for transactions made through ISO. See Table 10-4 for information about energy and other services sold and revenue received, including those sold to CalPX and 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 forecasted. Power requirements could also decrease during a wet year because of the availability of the 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

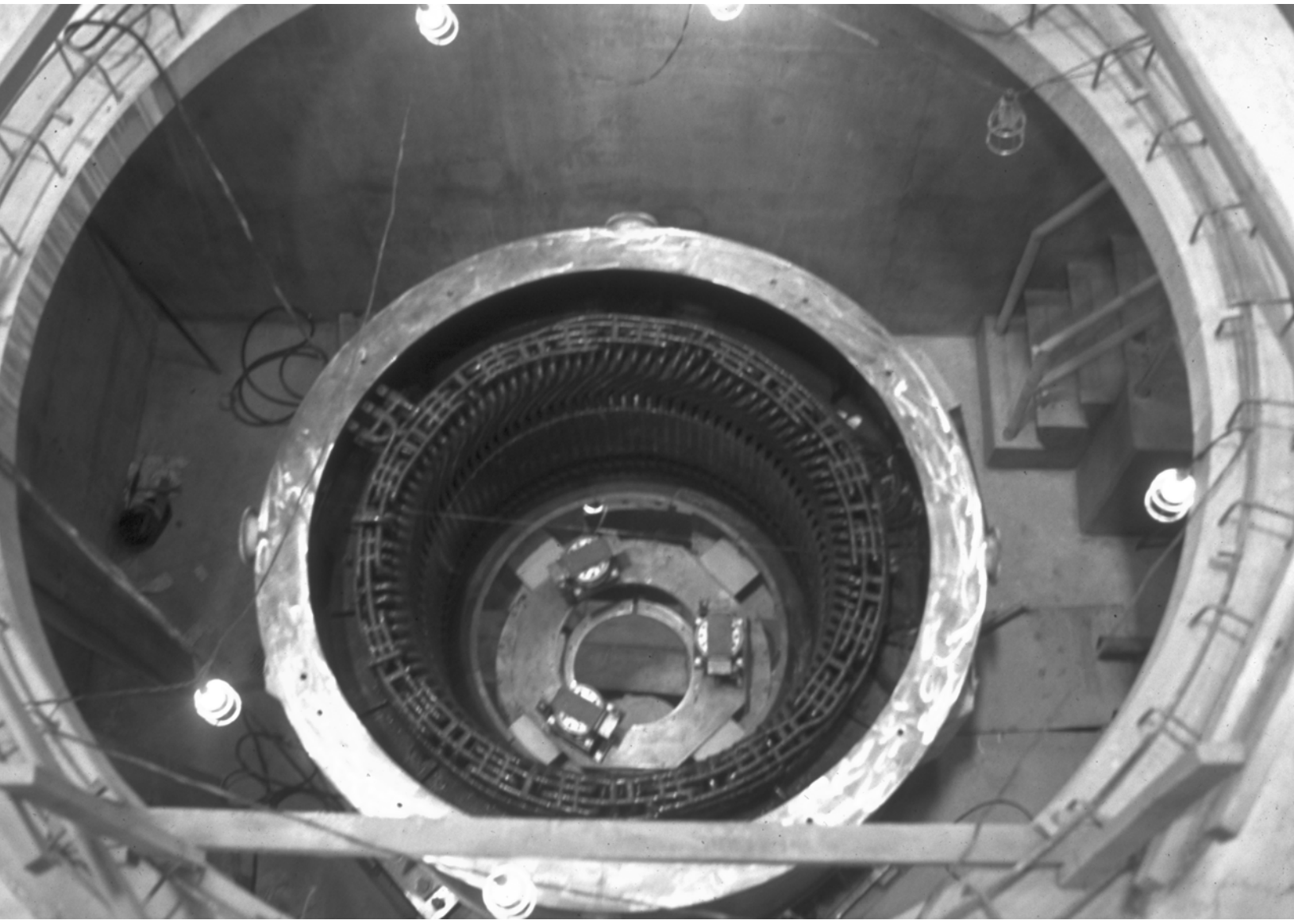
The Department bases its forecast of electric power primarily on SWP pumping power requirements to deliver water for SWP contractors' short-term and long-term water delivery requests. Requirements are based on the amount of energy necessary to deliver entitlement water requested by water contractors, 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 2 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



Top view of motor installed at Oso Pumping Plant

Significant Events

- In May 1999, the Director's Safety Review Board met and evaluated Oroville, Bidwell Bar, Lime Saddle, Thermalito Diversion, Thermalito Forebay, Thermalito Afterbay, and Feather River Hatchery Dams.

- Routine inspections were conducted by staff from both the Division of Operations and Maintenance and the Division of Safety of Dams 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, and Little Panoche Detention Dams in the San Luis Field Division (O&M and U.S. Bureau of Reclamation); at Cedar Springs Dam; and at Devil Canyon Power Plant Second Afterbay, Warne Power Plant (O&M and Federal Energy Regulatory Commission), and Perris Dams in the Southern Field Division.

The Department of Water Resources, through the Division of Operations and Maintenance, monitors all State Water Project facilities to ensure safety and reliability. Staff also conduct annual, biannual, and quinquennial inspections and make 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 collect and evaluate data about the performance of each facility. Engineers from DSOD 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 used jointly with USBR, and are not currently under the jurisdiction of DSOD. 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.

FERC inspects all licensed SWP facilities annually. These inspections include a review of significant events, instrumentation data, and the visual appearance of each dam, penstock, power plant, etc.

Inspecting and Maintaining Project Dams

During 1999, 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 safe for continued 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 routine inspections were performed by O&M as well.

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, and Little Panoche Detention Dams in the San Luis Field Division (O&M and USBR); at Cedar Springs Dam; and at Devil Canyon Power Plant Second Afterbay, Warne Power Plant (O&M and FERC), 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, power plant, 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 May 1999, the Director's Safety Review Board met and evaluated Oroville, Bidwell Bar, Lime Saddle, Thermalito Diversion, Thermalito Forebay, Thermalito Afterbay, and Feather River Hatchery Dams.

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. They also 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 May 1999, the third 5-year FERC safety consulting board inspection for the Oroville-Thermalito Complex was conducted. In September 1999, the fifth 5-year FERC safety consulting board inspected the Castaic-Devil Canyon power complex.

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 detention 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 volume of runoff and sediment deposition are much greater than estimated during the original design of the detention basin in the mid-1960s.

USBR designed and constructed the San Luis Canal segment of the California Aqueduct, and the Department shares 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 among the Corps, 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 ongoing, 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 pays 45 percent of the Department's study cost.

A draft Feasibility Report/Environmental Impact Statement/Environmental Impact Report was released to the public in March 1999. A public meeting on the document was held in April 1999. Two candidate plans demonstrating a federal interest were presented:

- 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.

Compelling comments opposing both candidate plans were received from the public and from agencies: (1) The enlarged Westside Detention Basin alternative was criticized for discharging floodwater taken across the Aqueduct to a location inconsistent with recent historical pre-Aqueduct flooding patterns and was determined to be an unacceptable solution. (2) The U.S. Fish and Wildlife Service and the California Department of Fish and Game deemed that the adverse impacts to listed species in the vicinity of the Pasajero Gap Dam and Reservoir could not be mitigated. Consequently, the Gap Dam was determined to be unacceptable.

The investigation then focused on two different alternatives. One, estimated to cost in excess of $300 million, would provide significantly greater flood storage west of the Aqueduct. Another more promising plan would rely on some increased storage west of the Aqueduct by taking a portion of the floodwater into the Aqueduct and conveying it south as storage. The storage facility would be constructed on less productive farmland down slope of the Aqueduct near Kettleman City. With this direction in the investigations, federal authorization for a new project is not expected prior to a possible Water Resources Development Act in 2002.

The Department, with the support of the State Water Contractors, has continued to provide funds and staff support to a Coordinated Resource Management Plan group called the Stewards of the Arroyo Pasajero Watershed. The mission of 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 watershed management program will increase watershed infiltration and decrease erosion, complementing any structural flood control improvements and reducing the threat Arroyo Pasajero poses to the California Aqueduct and surrounding communities.

Cantua Creek Stream Group. The Department constructed interim measures to reduce flood water and sediment inflows to the San Luis Canal from the Cantua and Salt Creek drain inlets. By slightly resizing the western embankment and excavating to maximize the effectiveness of existing flood easements and by constructing decanting weirs upstream of the existing drain inlets, the impounding capacity of the existing ponding basins prior to 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 more frequent floods.

The reconnaissance study for flood control measures on Martinez, Domengine, Salt and Cantua Creeks, and on Arroyo Hondo and Arroyo Ciervo is largely on hold pending further progress on the Arroyo Pasajero project. A preliminary draft reconnaissance report on Tumey Gulch is being prepared to supplement the preliminary draft report on the other five drainages. The most cost-effective solution for these drainages is expected to be dependent upon the final plan adopted for Arroyo Pasajero. During the interim, activity will likely be limited to selective acquisition of flood right-of-way along the west side of the Aqueduct.

Repairs and Modifications. Table 11-1 presents information, arranged chronologically, about significant scheduled and unscheduled outages at SWP pumping and power plants in 1999. The table includes information about incidents resulting in outages exceeding 14 days.

Table 11-1
Outages for Maintenance and Repair of Facilities in 1999, by Month

Month	*Facility*	*Description*
January	Pearblossom Pumping Plant	Units 1, 2, 4, 5, 6, 8, and 9 out of service from January 4 to March 3 due to Pool 59 repairs.
	Chrisman Pumping Plant	Unit 8 out of service from January 4 to May 24 for transformer KYD rewind.
	Alamo Power Plant	Unit 1 out of service from January 5 to March 2 to inspect seals and rebuild governor.
	Devil Canyon Power Plant	Unit 2 out of service from January 11 to March 5 for annual maintenance.
	Las Perillas	Units 1, 2, and 4 out of service from January 11 to February 17 to replace motor switchgear.
	Las Perillas	Unit 3 out of service from January 11 to February 18 to replace motor switchgear.
	Badger Hill Pumping Plant	Units 1, 2, 3, and 4 out of service from January 17 to February 17 to replace motor switchgear.
	Hyatt Power Plant	Unit 3 out of service from January 19 to April 13 for annual maintenance.
February	Thermalito Diversion Dam Power Plant	Unit 1 out of service from February 8 to March 5 to install new annunciator.
	Thermalito Pumping-Generating Plant	Unit 1 out of service from February 9 to April 16 for annual maintenance.
	Devil Canyon Power Plant	Unit 3 out of service from February 16 to March 16 for unit warranty work.
	Las Perillas Pumping Plant	Unit 5 out of service from February 19 to March 23 to install new motor switchgear.
	Las Perillas Pumping Plant	Unit 6 out of service from February 19 to March 24 to install new motor switchgear.
	Badger Hill Pumping Plant	Units 5 and 6 out of service from February 19 to March 23 to install new motor switchgear.
March	Dos Amigos Pumping Plant	Unit 1 out of service from March 1 to April 30 to repair leaking discharge line.
	Edmonston Pumping Plant	Unit 12 out of service from March 8 to April 1 to replace circuit breaker.
	Mojave Siphon Power Plant	Unit 1 out of service from March 15 to June 11 to install isolation flange on No. 1 line.
	Barker Slough Pumping Plant	Units 2 through 9 out of service from March 17 to April 17 to clean Travis Tank.
	Cordelia Pumping Plant	Units 1 through 11 out of service from March 17 to April 19 to clean Travis Tank.

Table 11-1 (Continued)
Outages for Maintenance and Repair of Facilities in 1999, by Month

Month	*Facility*	*Description*
	Chrisman Pumping Plant	Unit 2 out of service from March 31 to April 23 to replace discharge valve down-stream seat “O” ring.
April	Barker Slough Pumping Plant	Unit 1 out of service from April 1 to April 16 to clean Travis Tank.
	Edmonston Pumping Plant	Unit 10 out of service from April 5 to April 25 to replace motor breaker.
	Devil Canyon Power Plant	Unit 2 out of service from April 5 to April 20 for generator breaker maintenance.
	Pearblossom Pumping Plant	Unit 4 out of service from April 5 to July 20 to investigate pump casing leak and repair pump.
	South Bay Pumping Plant	Unit 3 out of service from April 9 to April 27 to inspect thrust bearing and repair resistance temperature detector lead.
	Hyatt Power Plant	Unit 5 out of service from April 14 to May 19 for annual maintenance.
	Reid Gardner Unit No. 4	Unit out of service from April 30 to May 24 for annual maintenance.
May	Thermalito Pumping-Generating Plant	Unit 4 out of service from May 3 to May 25 for annual maintenance.
	Edmonston Pumping Plant	Unit 4 out of service from May 10 to June 24 to retrofit circuit breaker.
	Oso Pumping Plant	Unit 3 out of service from May 24 to June 9 to replace leaking discharge valve operating seat “O” ring.
June	Thermalito Diversion Dam Power Plant	Unit 1 out of service from June 2 to June 24 for annual maintenance.
July	Pearblossom Pumping Plant	Unit 9 out of service from July 13 to December 14 to inspect pump mechanical shaft seal and repair pump head cover damage.
	Edmonston Pumping Plant	Unit 5 out of service from July 26 for stator rewind. Completion expected in 2000.
August	Thermalito Diversion Dam Power Plant	Unit 1 out of service from August 9 to September 21 to replace interrupter switch.
September	Cordelia Pumping Plant	Unit 1 out of service from September 7 to replace motor power factor correction capacitor that had failed. Completion expected in 2000.
	Gianelli Pumping-Generating Plant	Unit 2 out of service from September 7 to December 17 for biennial maintenance and breaker replacement.
	Edmonston Pumping Plant	Unit 8 out of service from September 13 to retrofit unit breaker. Completion expected in 2000.
	Teerink Pumping Plant	Unit 8 out of service from September 21 for annual maintenance. Completion expected in 2000.
October	Hyatt Power Plant	Unit 2 out of service from October 4 to November 5 for annual maintenance.
	Thermalito Pumping-Generating Plant	Unit 1 out of service from October 4 to November 10 for annual maintenance.
	Gianelli Pumping-Generating Plant	Unit 3 out of service from October 6 to October 28 for work on amortisseur winding.
	Dos Amigos Pumping Plant	Unit 1 out of service from October 9 to October 25 to inspect leaking vane control oil head.

Table 11-1 (Continued)
Outages for Maintenance and Repair of Facilities in 1999, by Month

Month	*Facility*	*Description*
November	Gianelli Pumping-Generating Plant	Unit 1 out of service from November 1 to December 7 to replace main breaker.
	Dos Amigos Pumping Plant	Unit 2 out of service from November 1 to November 24 for biennial maintenance.
	Chrisman Pumping Plant	Unit 4 out of service from November 1 for transformer KYB work. Completion expected in 2000.
	Chrisman Pumping Plant	Unit 5 out of service from November 1 to December 3 for transformer KYB work.
	Devil Canyon Power Plant	Unit 3 out of service from November 3 for annual maintenance. Completion expected in 2000.
	Hyatt Power Plant	Unit 4 out of service from November 8 to December 30 for annual maintenance.
	Mojave Siphon Power Plant	Unit 1 out of service from November 8 to November 23 for annual maintenance.
	Chrisman Pumping Plant	Unit 7 out of service from November 10 to repair motor stator windings. Completion expected in 2000.
	Chrisman Pumping Plant	Unit 9 out of service from November 10 to replace impeller. Completion expected in 2000.
	Thermalito Pumping-Generating Plant	Unit 2 out of service from November 15 to December 30 for annual maintenance.
	Badger Hill Pumping Plant	Units 1, 2, 3, and 4 out of service from November 15 to December 13 to replace discharge valve on Units 1, 2, and 3.
	Pine Flat Power Plant	Units 1, 2, and 3 out of service from November 16 to December 9 for plant and switchyard maintenance.
	Teerink Pumping Plant	Unit 1 out of service from November 24 to December 22 to repair motor air cooler water supply pipe.
	Edmonston Pumping Plant	Unit 9 out of service from November 22 to replace unit breaker. Completion expected in 2000.
	Warne Power Plant	Unit 2 out of service from November 29 to December 23 for annual maintenance.
	South Bay Pumping Plant	Unit 9 out of service from November 29 to replace motor. Completion expected in 2000.
	Dos Amigos Pumping Plant	Unit 1 out of service from November 30 for discharge valve work and oil leak repairs. Completion expected in 2000.
December	Pine Flat Power Plant	Unit 1 out of service from December 14 for annual maintenance. Completion expected in 2000.
	Las Perillas Pumping Plant	Units 1, 2, 3, and 4 out of service from December 15 to replace discharge valve on Units 1, 2, and 3. Completion expected in 2000.
	Banks Pumping Plant	Units 1, 2, and 3 out of service from December 16 for repair work on Unit 3. Completion expected in 2000.

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

Santa Ana Pipeline modificiations

Significant Events

- Construction of the East Branch Extension started on February 26, 1999, with the issuance of a Notice to Begin Work for a contract to construct pipeline Reaches 1 and 2. This was the first of 14 contracts for this project that will be awarded during the next 18 months. It is anticipated that the project will be operational in fall 2002. As of December 31, 1999, eight contracts had been awarded. The official groundbreaking ceremony took place on August 23, 1999.

- Fabrication of a 54-inch-diameter steel pipe for the East Branch Extension started on May 26, 1999. A total of 1,100 sections will be required for this project. As of December 31, 1999, more than 800 sections were in the fabrication process.

- Division of Engineering staff participated in the steady-state flow test performed on the East Branch of the California Aqueduct in December 1999. This test was part of ongoing studies to increase the flow capacity of the East Branch.

- Division personnel investigated, designed, and inspected construction of various urgent canal and facilities repair contracts.

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. Following the start of the South Bay Aqueduct facilities in 1960, the first water delivery through the SWP was made in 1965. 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 delivered water to Lake Perris, its southernmost point, with the 1973 completion of its facilities.

SWP water was delivered to Napa County in 1968, through the first phase of the North Bay Aqueduct, and to Solano County in 1988, by the second phase. The first SWP water delivery through the Coastal Branch, Phase I into Kings and Kern Counties, was made in 1968. With completion of the Phase II facilities, water was delivered to San Luis Obispo and Santa Barbara Counties in 1997.

Even before completion of the initial facilities in 1973, work began in the early 1970s 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 the Devil Canyon Second Afterbay, 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 service area, which is scheduled to be completed in mid-2002.

Design Activities

Projects

DOE worked on 39 design projects in 1999. Table 12-1 lists these projects along with expected or actual design completion dates (see tables at end of chapter). In addition to designing projects, the design staff conducted special deficiency studies of dams, canal embankments, and other SWP facilities. Some of the studies and activities included

- Gap Dam exploration drilling
- Eastside Bypass levee foundation exploration drilling
- Perris Dam foundation exploration drilling
- backfilling of an observation well and slope indicator holes at Cedar Springs Dam
- developing drawdown criteria for San Luis Dam
- preparing plans and specifications for Grant Line Canal rubber dam alternative
- inspecting Willow Slough Bypass for preparation of a contract to raise the levees
- performing Gorman Creek flood studies
- assisting with the steady-state flow test on the East Branch
- studying and mapping of the breach inundation area for Castaic and Cedar Springs Dams
- preparing an inundation plan for Butte County
- evaluating hydrology and capacity of cross drainage facilities
- preparing a report on Antelope Dam spillway repair
- reviewing hydraulic studies of Hyatt Discharge Tunnel prepared by a consultant
- various other activities

Planning and Studies

DOE staff met with representatives of the U. S. Army Corps of Engineers to discuss the use of a soil bentonite slurry wall alternative for the American River levee system, the Arroyo Pasajero Gap Dam, and

other flood management activities and project operation matters.

DOE staff also completed the following studies:

- Castaic intake tower analysis
- conditions of radial gates at various SWP
- facilities
- inspection of all sites with CO_2 systems
- Delta HVAC equipment requirements
- Pyramid Dam bridge seismic retrofit
- Antelope Dam spillway
- Second Afterbay outlet structure modification
- modification of Chrisman Pumping Plant discharge valve hydraulic system
- conversion of As-Built Drawings to the Division of Operations and Maintenance AutoCAD system
- aqueduct spill basin surge analysis at Check 66
- continued studies and analysis of the Byron Bridge Road deterioration problem
- work on Federal Energy Regulatory Commission requirements as they pertain to operating the SWP

Construction Activities

DOE worked on 54 construction contracts in 1999. These are listed in Table 12-2. (See tables at end of chapter.) The table shows contract title, specification number, date the contractor received the notice to begin work, the expected or actual acceptance date, and the actual or estimated contract cost. Resolution of contract claims may extend the actual contract closeout beyond the actual completion date.

Tables 12-1 and 12-2 are organized geographically north to south according to construction divisions. Within each division, facilities where design or construction activities occurred are listed alphabetically, and activities at each facility are listed chronologically.

Oroville Division

Feather River Fish Hatchery. The contract to modify these facilities, which started in May 1998, was accepted in August 1999. Project features included 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.

Hyatt Power Plant and Thermalito Pumping-Generating Plant. Work on a contract to refurbish turbine Units 1, 3, and 5 in Hyatt Power Plant started in February 1999 and is scheduled to be completed in March 2004. The work consists of

- designing, building, and testing a turbine model;
- designing, manufacturing, and installing new turbine runners, new wicket gates, facing plates, and appurtenances;
- furnishing spare parts and special tools; and
- providing erecting engineer and liaison services.

A contract to furnish governor replacements for Hyatt Power Plant and Thermalito Pumping-Generating Plant was started in November 1999 with completion scheduled for May 2001. The work consists of

- designing, manufacturing, testing and delivering digital governors, controls/auto-synchronizers, relay valve assemblies, spare parts, accessories, and special tools;
- providing erecting engineer and liaison services; and
- providing a training program.

Work on a contract to furnish automatic voltage regulators for Units 1 through 4 in Thermalito Pumping-Generating Plant was started in September 1998 and was completed in March 1999. The work under this contract consisted of

- furnishing a retrofit modification of the existing excitation and voltage regulating system;
- providing the services of an erecting engineer; and
- providing a training program.

Thermalito Diversion Dam. Work on a contract for fabricating, delivering, and installing 15 kV switchgear at Thermalito Diversion Dam Power Plant was started in January 1999 and completed in September 1999.

Delta Facilities

South Delta. The contract to construct sets of two fish screens each for agriculture diversion to

Sherman Island at Horseshoe Bend on the Sacramento River, which started in July 1998, continued during 1999. Additional work was added by a contract change order that extended the completion date to May 2001.

Rock Barriers. Work on the multiyear (1998, 1999, and 2000) contract for construction of the seasonal temporary rock barriers in designated south Delta waterways (Middle River, Old River, and Grant Line Canal) continues. The installation and removal of barriers for 1999 were completed by December 1999.

These temporary rock barriers are installed to enhance water levels and circulation in the south Delta for local agricultural diversion, to assist fish migration, and to facilitate the gathering of hydraulic data for the design of future permanent barriers. Installation and removal is directed by Department personnel.

Suisun Marsh Facilities

Roaring River and Barker Slough. Work on a contract for levee restoration and site mitigation at Roaring River Slough Distribution System and Barker Slough Pumping Plant started in July 1999 and was completed in September 1999.

The work at Roaring River Slough consisted of raising levees and excavating for placement of geofoam block fill material, geotextile fabric, PVC geomembrane liner, aggregate base for levee road surface, and placement of stone slope protection.

The work at Barker Slough consisted of excavating and grading the mitigation area adjacent to Barker Slough, constructing drainage ditches, and disposing of excavated materials.

North San Joaquin Division

California Aqueduct. Work on canal repair, seepage, roads, concrete construction, and erection of facilities identification signs, which started in April 1998, was completed in February 1999.

South Bay Pumping Plant. Work on a contract for modifications at South Bay Pumping Plant was started in August 1999 and is scheduled for completion in March 2000. The work consists of

- furnishing and installing a new air conditioning system for the north service bay;
- relocating a hydraulic power unit;
- furnishing and installing pumping unit motor exhaust air ducts;
- removing an existing wall and constructing a new wall; and
- performing required electrical work.

South Bay Aqueduct. Contract work for removal of sediment and repair of the Santa Clara Terminal Facilities tank was started in February 1999 and completed in July 1999. The work consisted of

- removing and disposing of accumulated sediment from the terminal tank bottom;
- cleaning and repairing the interior of the tank;
- inspecting the tank bottom using magnetic flux exclusion technology;
- recoating the tank interior with high solid epoxy material; and
- installing high potential magnesium anode cathodic protection.

San Luis Division

California Aqueduct. Work on flood easement restoration and flood weirs started in July 1999 with an expected completion date in February 2000. The work consists of

- constructing compacted earth embankment from Harlan Avenue to Cerini Avenue adjacent to the California Aqueduct, mileposts 132 to 133;
- constructing a pump pad at milepost 132.8;
- raising the north Cantua Creek levee;
- constructing a gabion weir and removing sediment from an existing box inlet at milepost 133.7;
- constructing a concrete flume inlet transition and placing rock protection;
- constructing Salt Creek Weir and placing rock protection at milepost 135.8;
- furnishing and installing a 48-inch slide gate on an exiting inlet structure; and
- performing associated road work.

Coastal Branch

Phase I—Las Perillas and Badger Hill Pumping Plants. Contract work to furnish replacement switchgear and excitation systems in both Phase I plants,

which started in November 1994, was completed in April 1999.

Phase II—Pumping Plants. Work on the contract to furnish pump units for Devil's Den, Bluestone, and Polonio Pass Pumping Plants started in December 1993, with a projected acceptance date in March 2000. Although the pumps have been operational since August 1996, remedial warranty work was necessary and final operational testing was delayed. Units were accepted and the contract closed. The pumping plant completion contract that started in March 1995 was completed in May 1999.

Valves. Work to furnish ball valves for Phase II was started in April 1994 and was physically completed in August 1998, with acceptance expected in March 2000. The contract for designing, manufacturing, shop testing, and delivering butterfly valves of various sizes with actuators and control equipment, which started in July 1994, was physically completed in December 1999, with acceptance expected in March 2000.

Contract Administration. During 1999, coastal project staff continued the process of closing out completed contracts. Efforts continued to resolve outstanding potential and certified contract claims. Approximately 18 claims were settled during the year. At the end of 1999, only the claims for pipeline Reach 2 and pipeline Reaches 5a.1/5a.2 remain, with several issues still needing to be settled. The contractor filed for arbitration on November 4, 1998, on four outstanding issues. Coastal project staff continue working to resolve these issues.

South San Joaquin Division

Teerink Pumping Plant. Work on a contract to furnish spare coils and appurtenant materials, which started in August 1997, was completed in December 1999.

Tehachapi Division

Edmonston Pumping Plant. Work on the contract to furnish 15 kV circuit breakers for this facility, which started in April 1997, continues. The scheduled completion date was extended to June 2002 because more work was added to the original contract by change orders to include furnishing 15.8 kV circuit breakers for Gianelli Pumping-Generating Plant and Devil Canyon Power Plant.

West Branch

Angeles Tunnel. The contract to fabricate and furnish tunnel-gate stems for the Angeles Tunnel Intake Works, started in October 1997, was completed in June 1999.

Gorman Creek. The contract to restore Gorman Creek Bypass Channel was awarded in September 1997, but work was not started until June 1998 because of heavy El Niño rainstorms. The work was completed in May 1999. Additional work was added to the original contract by several contract change orders, including

- repairs to the existing Peace Valley Pipeline
- repairs to the Lower Quail Canal
- construction of a new 12-foot wide all-weather access road adjacent to the channel
- repairs to the bypass channel invert

Castaic Dam. Work on a contract to repair the Castaic Dam outlet tower access bridge, which started in November 1998, was completed in February 1999. A second contract to paint the tower bridge and crane was started in August 1999 and completed in December 1999.

Mojave Division

Mojave Siphon Power Plant. The contract to furnish and install turbines, generators, and governors, started in August 1989, is expected to be completed in February 2001. The contract to furnish acoustic flowmeters for the plant, started in October 1993, is expected to be completed in April 2000. A contract to construct valve vaults to furnish and install turbine shutoff valves for Units 1 and 2 at this facility started in April 1998 and was completed in July 1999.

Pearblossom Pumping Plant. The contract to manufacture, furnish, install, and test three 375 cubic feet per second vertical centrifugal pump units at Pearblossom Pumping Plant, started in May 1987, was completed in 1999. However, a large amount of remedial warranty work has to be performed before the units can be accepted.

California Aqueduct. The contract started in December 1998 to repair canal lining and operating roads from mileposts 305.10 to 305.44, mileposts 323.25 to 330.32, and mileposts 365.73 to 395.71 was completed in May 1999. A second contract to repair canal lining and culverts in pools 49 and 54 was started in September 1999 and was completed in December 1999. This second contract was completed in only a few weeks, with crews working 24 hours a day, to minimize outages.

Santa Ana Division

San Bernardino Tunnel Intake. The contract to reconstruct the San Bernardino Tunnel Intake Structure, started in July 1995, was completed in June 1999. Remedial warranty work on the gate hydraulic operating system had to be completed before the contract could be accepted.

Santa Ana Pipeline. Work on a contract to perform modifications and repairs to the Santa Ana Pipeline at milepost 433.06 started in October 1998 and is scheduled to be completed in June 2000. A second contract to perform repair work to Sugarloaf Mountain Road and drainage facilities started in September 1999 and is scheduled to be completed in May 2000.

Santa Ana Division—East Branch Enlargement

Devil Canyon Power Plant. Remedial warranty work by the turbine manufacturer was completed. Work on this contract started in July 1987 and is scheduled to be accepted in 2001.

A contract to perform site work required by FERC was started in September 1997 and completed in December 1999.

Santa Ana Division—East Branch Extension

Construction of Phase I of the East Branch Extension started with the issuance of a Notice to Begin Work on February 26, 1999, for pipeline Reaches 1 and 2. The project is being constructed to convey 8,650 acre-feet of SWP water annually to the San Gorgonio Pass Water Agency service area, with provisions to provide San Bernardino Valley Municipal Water District deliveries to the Yucaipa Valley. The conveyance facilities will consist of a combination of existing pipelines, three new pipeline reaches, three new pump stations, and a new reservoir located in San Bernardino and Riverside Counties. The official groundbreaking ceremony for site work took place in Yucaipa on August 23, 1999. The following is a brief description of construction contracts already awarded and in progress.

Pump Stations. Work started in March 1999 on a contract to furnish power circuit breakers and switchyard equipment for Greenspot and Crafton Hills Pump Stations and is scheduled for completion in June 2001. A second contract to furnish power transformers for these facilities started in May 1999, with a scheduled completion date in August 2001.

Work started in October 1999 on a contract to design, manufacture, test, and deliver 5 kV switchgear for Greenspot and Crafton Hills Pump Stations. The contract also includes design, manufacture, testing, and delivery of programmable logic controllers for the Cherry Valley Pump Station. The completion date is scheduled for December 2001.

Work started in November 1999 on a contract to design, manufacture, shop test, and deliver three 4,500 gallons per minute and one 9,000 GPM vertical turbine pumps for Greenspot Pump Station, and two 4,500 GMP and one 9,000 GPM vertical turbine pumps for the Crafton Hills Pump Station. For Cherry Valley Pump Station, the contract calls for two 3,600 GMP vertical turbine pumps, as well as electric motors, appurtenant equipment, and associated training programs. Completion of this contract is scheduled for August 2001.

Pipeline Reaches. A contract for pipeline Reaches 1 and 2, which start at Mill Creek in San Bernardino County and extend through the cities of Yucaipa and Calimesa to Garden Air Creek in Riverside County, was awarded in February 1999, with expected completion in April 2001. The major features of the contract include

- 7-1/2 miles of 54-inch-diameter buried steel pipeline
- jacked road crossings
- excavation and backfilling
- asphalt pavement removal and replacement
- construction of reinforced concrete structures
- valves

- furnishing and installing fiber optic cable
- seeding restored ground areas

Valves. Three separate contracts were awarded to furnish different types of valves. Work started in October 1999 on a contract to furnish ANSI ball valves, with a scheduled completion date in June 2001. A contract to furnish AWWA butterfly valves started in October 1999, with completion scheduled for June 2001. A contract to furnish ANSI butterfly valves started in November 1999, with completion scheduled for June 2001. Change orders to each valve contract have delayed completion.

Construction Activities in Multiple Divisions

Power Plants. The contract to furnish butterfly valves for Mojave Siphon and Devil Canyon Power Plants, started in August 1991, is scheduled for completion in June 2002.

Storage Tank Removal. Work was completed in August 1999 on a contract to remove and replace underground storage tanks at Oroville, Delta, and San Luis Field Divisions.

Circuit Breakers and Coils. The contract to furnish 230 kV SF6 power circuit breakers for Banks and Edmonston Pumping Plants, started in March 1998, was completed and accepted in July 1999.

Work continues on a contract to furnish spare coils and associated materials for Pearblossom and Oso Pumping Plants. This work was started in March 1999 and is scheduled to be completed in April 2001.

Gantry Cranes. A contract to paint outdoor gantry cranes and an access bridge at Dos Amigos, Buena Vista, Teerink, Christman, Edmonston, Oso, and Pearblossom Pumping Plants, and Lake Perris started in July 1998 and was completed in January 1999.

Roads and Paved Areas. In August 1998 work started on a contract to apply an asphalt seal coat and asphalt slurry seal to the paved areas at the Oroville, Delta, San Luis, San Joaquin, and Southern Field Divisions. The completed contract was accepted in November 1999.

Work started in August 1999 on a contract to seal and pave roads at Oroville, Delta, San Luis, San Joaquin, and Southern Field Divisons and is scheduled to be completed in August 2000.

Site Revegetation. Work continues on a contract for revegetation of disturbed areas at Mojave Siphon Power Plant and Devil Canyon Second Afterbay. This work, which started in November 1999, fulfills FERC permit requirements and is scheduled to be completed in July 2001. The work consists of

- performing earthwork
- planting
- installing an irrigation system
- hydroseeding
- erosion control
- installing signs
- providing a 1-year plant maintenance and monitoring period

Miscellaneous Construction Activities

The following activities, although part of the SWP, are categorized as “miscellaneous.”

Oroville Wildlife Area. Work was started in September 1999 on a contract to construct an enlarged notch in a south levee of the Feather River system. The main part of the work was completed in December 1999, with other work scheduled for completion in October 2000.

Bethany Reservoir. A contract to dismantle and remove a Department-owned wind electrical energy-generating farm in the Bethany Reservoir area was started in May 1999 and completed in December 1999.

Colusa Bypass. In May 1999, work started on a contract to remove accumulated sediment from the Colusa Bypass. When work was completed in November 1999, approximately 2.2 million cubic yards of material had been removed and placed in adjacent spoil piles.

Environmental Activities

Environmental issues have concerned the Department since the inception of the SWP. These issues have increased in magnitude with the increased enactment of laws at both the federal and State level. To comply with these laws, the Department has incorporated them into its design and construction activities. A specific section dealing with environmental requirements has become part of the specification for construction contracts. Contracts being developed are reviewed carefully by the DOE environmental specialist to determine which of the requirements need to be included for each contract.

In addition to contracts that went out to construction, the environmental specialist oversaw work on the following projects during 1999:

- *Thermalito Diversion Dam, Radial Gate Rehabilitation*—completed without impacting nesting activities of migrating Cliff swallows (*Petrochelidon pyrrhanota*)
- *Reinforced Levee Notch, Oroville Wildlife Area*—proper disposal of debris encountered in an old burn dump by placing it in an encapsulated burial without disturbing a nearby nesting osprey (*Pandion haliaetus*)
- *Feather River Construction Debris Removal*—removal of old construction debris (in the 1960s) without working in the water, without disturbing vegetation, and while also preserving cultural and historical artifacts
- *Eastside Bypass Levee Raising*—raising of levees without disturbing endangered plant and animal species and revegetation of disturbed areas with appropriate seed mix
- *Revegetation of Mojave Siphon Power Plant and Devil Canyon Second Afterbay*—revegetation of disturbed areas with appropriate riparian vegetation
- *East Branch Extension*—required significant environmental documentation (i.e., environmental impact reports and supplemental EIRs) and extensive consultation with regulatory agencies to begin the project

Right of Way Activities

The Department has spent a net total of $246.2 million to acquire rights of way and recreation and mitigation land for the SWP from its inception to December 31, 1999. From January 1 to December 31, 1999, the Department

- finalized acquisition of easement rights over two parcels (53.68-acre permanent easement and 26.74-acre temporary easement) for a total cost of $307,509 for the Coastal Branch, Phase II Project;
- acquired property rights over 25 parcels (32.79-acre fee, 27.44-acre permanent easement, and 57.22-acre temporary easement) for a total cost of $826,125 for the East Branch Extension, Phase II Project;
- acquired fee title to 5 acres for $49,999 at the South Geysers facility to facilitate the sale of adjacent property and building;
- acquired a flowage easement (0.1 acre) for $2,300 on East Branch, Mojave Division;
- acquired a road easement (0.35 acres) for $500 on California Aqueduct, North San Joaquin Division;
- managed 88 leases for a total revenue of $926,791;
- obtained 68 Temporary Entry Permits for the Westside Reservoir studies; 5 for Arroyo Pasajero studies; 6 for installation of CIMIS weather stations; 14 for East Branch Extension; 2 for Sugar Loaf Mountain; 20 for Delta monitoring well decommissioning; 1 for Delta water quality monitoring station; 7 for Delta barriers and studies; 1 for groundwater and slippage studies at South Bay Aqueduct terminal facilities; 3 for groundwater monitoring wells in Tehama County; 5 for Coastal Branch, Phase II; 1 for Orestimba Creek studies; 1 for Suisun Marsh studies; 1 for San Luis Reservoir studies;
- issued 22 encroachment permits and collected fees of $45,880 for review and inspection costs;
- completed two encroachment reviews where the applicant had prior property rights;
- coordinated review of 16 tentative tract map developments within 1 mile of the Aqueduct; and,
- entered into six utility relocation agreements for the East Branch Extension.

Table 12-1
Design Activities, January 1, 1999, through December 31, 1999, by Division

Construction Division and Facility	*Construction Contract*	*Date Design Began*	*Design Estimated Completion Date*
Oroville Division			
Hyatt Power Plant	Furnish governor replacement, Units 1 through 6	May 1997	August 1999
	Ceiling replacement	June 1998	July 1999
	Renovate electrical controls for intake gate and gantry cranes	March 1999	January 2000
Lake Oroville	Lime Saddle Campground	January 1999	January 2000
Oroville Diversion Dam	Radial gate rehabilitation	April 1999	February 2000
Oroville Wildlife Area	Reinforced levee notch	December 1997	March 1999
Thermalito Diversion Dam and Oroville Dam Spillway	Stop-log fabrication/rehabilitation	July 1999	October 1999
Suisun Marsh Facilities			
Roaring River Slough Distribution System	Levee restoration and site mitigation	February 1999	April 1999
North Bay Aqueduct			
Cordelia Pumping Plant	Sediment removal, forebay	October 1999	November 1999
South Bay Aqueduct			
South Bay Pumping Plant	Plant modifications	February 1998	April 1999
North San Joaquin Division			
Banks Pumping Plant	Automatic voltage regulators, Units 1 through 7	October 1998	New schedule pending
Bethany Reservoir	Dismantle and remove wind farm	March 1999	April 1999
Clifton Court Forebay	Trash rake replacement	March 1998	October 1999
San Luis Division			
California Aqueduct	Flood easement restoration and flood weir mileposts 81, 135, and 136	November 1998	April 1999
Coastal Branch			
Badger Hill Pumping Plant	Pump refurbishment	October 1998	April 1999
Mojave Division			
California Aqueduct	Repair canal lining and culvert, mileposts 320 to 350	April 1999	September 1999
Santa Ana Division			
East Branch Extension	Crafton Hills Reservoir, Yucaipa	May 1997	March 2000
	Greenspot, Crafton Hills, and Cherry Valley Pump Stations	May 1997	December 1999
	Pipeline Reach 3, Garden Air Creek to Noble Creek	May 1997	February 2000
	Furnish ANSI ball valves	July 1997	October 1999
	Furnish ANSI butterfly valves	July 1997	November 1999

Table 12-1 (Continued)
Design Activities, January 1, 1999, through December 31, 1999, by Division

Construction Division and Facility	*Construction Contract*	*Date Design Began*	*Design Estimated Completion Date*
	Furnish AWWA butterfly valves	July 1997	October 1999
	Furnish pumps, motors, and variable frequency drives—Greenspot, Crafton Hills, and Cherry Valley Pump Stations	July 1997	November 1999
	Furnish 5 kV switchgear—Greenspot, Crafton Hills, and Cherry Valley Pump Stations	September 1997	October 1999
	Furnish circuit breakers—Greenspot and Crafton Hills Pump Stations	December 1997	March 1998
	Furnish power transformers, Greenspot and Crafton Hills Pump Stations	December 1997	May 1998
	Furnish and install control and communications system	January 1998	New Schedule Pending
	Valve vaults, Morton Canyon and Carter Street	November 1998	April 2000
	Install fiber optic cable—Greenspot Pump Station to Crafton Hills Pump Station	June 1999	April 2000
Santa Ana Pipeline	Sugarloaf Mountain road repair and drainage repair	July 1998	February 1999
West Branch			
Castaic Dam	Recoating Castaic tower access bridge and jib crane	February 1999	May 1999
Castaic Lake	Recreation facilities renovation—east ramp area	October 1998	November 1999
Operations Center Relocation	Building and site work	May 1998	April 1999
Oso Pumping Plant	Furnish automatic voltage regulators and excitation equipment	January 1999	October 1999
Pyramid Dam	Bridge seismic modifications and spillway repair	February 1999	December 1999
Multiple Divisions			
Banks Pumping Plant and Gianelli Pumping-Generating Plant	Furnish spare coils and materials	July 1999	January 2000
San Luis and San Joaquin Field Divisions	Stair addition, ADA modifications, and atrium enclosure	May 1998	October 1999
State Water Project	Seal and pave roads	March 1999	May 1999
Miscellaneous			
Merced River	Salmon habitat restoration	December 1998	February 1999

Table 12-2
Construction Activities, January 1, 1999, through December 31, 1999

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date (NTBW)*	*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 modification (97-24)	May 1998	August 1999	1,856
Hyatt Power Plant	Turbine refurbishment, Units 1, 3, and 5 (98-22)	February 1999	March 2004	10,150
Hyatt Power Plant and Thermalito Pumping-Generating Plant	Furnish governor replacement (99-19)	November 1999	May 2001	1,570
Thermalito Pumping-Generating Plant	Furnish automatic voltage regulators, Units 1 through 4 (98-12)	September 1998	December 2000	464
Thermalito Diversion Dam	Furnish and install 15 kV switchgear (98-17)	January 1999	November 1999	220
Delta Facilities				
Sherman Island	Construct fish screens (98-07)	July 1998	May 2001	2,860
Temporary Rock Barriers	Construct temporary rock barriers—1998 and 1999—Middle River, Old River, and Grant Line Canal (97-23)	January 1998	December 2000	3,734
Suisun Marsh Facilities				
Barker Slough Pumping Plant and Roaring River Slough	Restore levee and mitigate site (99-11)	July 1999	December 1999	1,792
North San Joaquin Division				
California Aqueduct	Repair canal, seepage, roads, concrete, and erect monument signs (98-04)	April 1998	February 1999	2,196
South Bay Pumping Plant	Modify plant (99-02)	August 1999	March 2000	207
South Bay Aqueduct	Remove sediment and repair tank, Santa Clara Terminal Facilities (99-01)	February 1999	July 1999	926
San Luis Division				
California Aqueduct	Construct flood weirs and restore flood easement (99-08)	July 1999	February 2000	1,140
Coastal Branch				
Phase I				
Las Perillas and Badger Hill Pumping Plants	Furnish replacement switchgear and excitation system (94-28)	November 1994	April 1999	573
Phase II				
Devil's Den, Bluestone, and Polonio Pass Pumping Plants	Furnish pump units (93-25)	December 1993	March 2000	4,070
	Complete pumping plants (93-31)	March 1995	May 1999	17,503
Valves	Furnish ball valves (93-34)	April 1994	March 2000	4,622
	Furnish butterfly valves and turbine bypass valve, Devil's Den Pumping Plant to Vandenberg AFB (94-06)	July 1994	March 2000	4,581
South San Joaquin Division				
Teerink Pumping Plant	Furnish spare coils and materials (97-02)	August 1997	February 2000	175
Tehachapi Division				
Edmonston Pumping Plant	Furnish 15 kV circuit breakers (97-01)	April 1997	June 2002	10,792

Table 12-2 (Continued)
Construction Activities, January 1, 1999, through December 31, 1999

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date (NTBW)*	*Acceptance Date (Expected or Actual)*	*Contract Costs (Thousands of dollars)*
West Branch				
Angeles Tunnel	Furnish intake gate stems, Angeles Tunnel intake works (97-07)	October 1997	June 1999	721
Gorman Creek Bypass Channel	Restore channel and emergency repairs at Peace Valley pipeline and lower Quail Canal (97-13)	September 1997	September 1999	7,557
Castaic Dam	Repair outlet tower access bridge (98-19)	November 1998	February 1999	303
	Recoat tower bridge and crane (99-12)	August 1999	December 1999	138
Mojave Division				
Mojave Siphon Power Plant	Furnish and install turbines, generators, and governors (89-13)	August 1989	February 2001	14,750
	Furnish and install acoustic velocity flowmeters (93-18)	October 1993	August 2000	437
	Construct valve vaults (97-25)	April 1998	June 2001	3,116
Pearblossom Pumping Plant	Furnish and install vertical centrifugal pumps (87-04)	May 1987	June 2001	2,571
California Aqueduct	Repair canal lining and roads—mileposts 305.10 to 305.44, mileposts 323.25 to 330.32, and mileposts 365.73 to 395.71 (98-25)	December 1998	June 1999	4,234
	Repair canal lining and culvert—mileposts 320 to 350 (99-29)	September 1999	August 2000	4,036
Santa Ana Division				
San Bernardino Tunnel Intake	Reconstruct intake structure (95-07)	July 1995	December 2001	25,531
Santa Ana Pipeline	Modify pipeline—milepost 433.06 (98-20)	October 1998	June 2001	1,400
	Repair Sugarloaf Mountain Road and drainage (99-18)	September 1999	May 2000	252
East Branch Enlargement				
Devil Canyon Power Plant	Furnish and install turbines, governors, and valves (87-15)	July 1987	January 2001	11,065
	Site work (96-20)	September 1997	December 1999	3,342
East Branch Extension-Phase I				
Greenspot and Crafton Hills Pump Stations	Furnish power circuit breakers and switchgear equipment (98-16)	March 1999	June 2001	300
	Furnish power transformers (98-18)	May 1999	August 2001	660
Greenspot, Crafton Hills, and Cherry Valley Pump Stations	Furnish 5 kV switchgear and furnish PLC cubicle, Cherry Valley Pump Station (99-15)	October 1999	December 2001	628
	Furnish pumps, motors, and variable frequency drives (99-17)	November 1999	August 2001	3,111
Pipeline Reaches	Construct pipeline Reaches 1 and 2—Mill Creek to Garden Air Creek (98-24)	February 1999	April 2001	20,649

Table 12-2 (Continued)
Construction Activities, January 1, 1999, through December 31, 1999

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date (NTBW)*	*Acceptance Date (Expected or Actual)*	*Contract Costs (Thousands of dollars)*
Valves	Furnish ANSI ball valves (99-20)	October 1999	June 2001	1,041
	Furnish AWWA butterfly valves (99-22)	October 1999	June 2001	862
	Furnish ANSI butterfly valves (99-23)	November 1999	June 2001	1,460
Multiple Divisions				
Power Plants	Furnish butterfly valves, Mojave Siphon and Devil Canyon Power Plants (91-15)	August 1991	June 2002	6,469
Storage Tank Removal	Remove and replace storage tanks, Oroville, Delta, and San Luis Field Divisions (97-11)	August 1997	November 1999	489
Circuit Breakers and Coils	Furnish 230 kV SF6 power circuit breakers, Banks and Edmonston Pumping Plants (97-26)	March 1998	July 1999	707
	Furnish spare coils and materials—Pearblossom and Oso Pumping Plants (98-27)	March 1999	April 2001	614
Gantry Cranes	Recoat outdoor gantry cranes and access bridges, Dos Amigos, Buena Vista, Teerink, Chrisman, Edmonston, Oso, and Pearblossom Pumping Plants and Lake Perris (98-08)	July 1998	January 1999	208
Roads and Paved Areas	Seal coat and slurry seal paved areas, Oroville, Delta, San Luis, San Joaquin, and Southern Field Divisions (98-10)	August 1998	November 1999	953
	Seal and pave roads, Oroville, Delta, San Luis, San Joaquin, and Southern Field Divisions (99-13)	August 1999	August 2000	2,325
Site Revegetation	Revegetation, Mojave Siphon Power Plant and Devil Canyon Second Afterbay (99-21)	November 1999	July 2001	363
Miscellaneous Activities				
Oroville Wildlife Area	Construct reinforced levee notch (99-07)	September 1999	November 2000	880
Bethany Reservoir	Dismantle and remove wind farm (99-10)	May 1999	December 1999	287
Colusa Bypass*	Remove sediment 1999 (99-04)	May 1999	December 1999	3,503

*Non-SWP activities

Information for this chapter was provided by the Division of Engineering and the Division of Land and Right of Way.

Chapter 13

Recreation

Picnic area at Lake Del Valle

Significant Events

- The groundbreaking celebration for the Arroyo Del Valle Youth Camp and Environmental Education Center took place on May 21, 1999. The event was co-sponsored by East Bay Regional Park District, Alameda County Office of Education, Camp Open Arms, and the Taylor Family Foundation.

- Among those participating in the groundbreaking ceremony were California State Senators Liz Figueroa and Richard Rainey, and State Assembly Members Lynne Leach and John Dutra. They were joined by Elaine Taylor of the Taylor Family Foundation, who spearheaded the project. Construction and implementation of the facility will occur in phases with Camp Arroyo Phase One scheduled for completion in spring 2001. The facility will include an energy-efficient operating system. The site is located at the west end of Lake Del Valle on 138 acres of land owned by EBRPD.

The State Water Project, a multipurpose project, 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 1999, SWP facilities received 4.11 million recreation days of use (Table 13-1), a slight decrease from the 4.20 million recreation days recorded in 1998. Recreational use at the 18 developed fishing access sites and along the California Aqueduct Bikeway nearly equaled that of 1998. 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-one percent of the total SWP recreational use in 1999 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 155 million recreation days have been recorded at SWP recreational facilities.

[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.

Facilities

Planning

During 1999, the Department of Boating and Waterways completed plans for the following projects:

- boat launching facility improvements at Medeiros area at San Luis Reservoir State Recreation area;
- improvements at Pyramid Lake Emigrant Landing area;
- Castaic Dam left abutment launch ramps; and
- shoreline improvements at the Sawpit Canyon area at Silverwood Lake.

New Facilities

Lake Davis. Boarding floats and anchors were installed by DBW at the following locations:

- Honker Cove
- Lightning Tree
- Camp 5 areas

Lake Oroville. The following activities were also completed:

- DBW paved the launch ramp and access road from Larkin Road and installed a boarding float at Thermalito Afterbay area.
- DBW installed a fuel guard at Lime Saddle Boat Ramp.
- Restrooms and a car-top launch for non-motorized boats were provided at the Diversion Pool area.

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 1999, by Field Division and Facility

Field Division	*Number of Recreation Days*
Oroville Field Division	
Frenchman Lake	240,000
Antelope Lake	70,000
Lake Davis	145,000
Lake Oroville and Thermalito Forebay	495,300
Thermalito Afterbay and Oroville Wildlife Area	258,000
Subtotal	*1,208,300*
Delta Field Division	
Lake Del Valle	319,000
Bethany Reservoir	20,000
Fishing Access Sites:	
Neils Hansen	200
California Aqueduct:	
Walk-In Fishing	800
Bikeway	100
White Slough Wildlife Area	11,500
Subtotal	*351.600*
San Luis Field Division	
San Luis Reservoir, including O'Neill Forebay and Los Banos Reservoir	405,400
California Aqueduct:	
Walk-In Fishing	12,000
Wildlife Areas	11,000
Subtotal	*428,400*
San Joaquin Field Division	
Fishing Access Sites:	
Kettleman City	1,200
Lost Hills	1,000
Buttonwillow	1,300
California Aqueduct:	
Walk-In Fishing	5,900
Subtotal	*9,400*
Southern Field Division	
Silverwood Lake	338,000
Lake Perris	1,052,100
Pyramid Lake	207,000
Castaic Lake	509,000
Fishing Access Sites:	
Quail Lake	1,800
77th Street East	100
Longview Road	100
California Aqueduct:	
Walk-In Fishing	2,600
Bikeway	500
Subtotal	*2,111,200*
Total	**4,108,900**

Improvements to Facilities

The following improvements were made at Lake Oroville during 1999 to help meet recreational demands.

- A cross link of the bike trail was completed, providing a shortcut in the vicinity of the power canal and the fish hatchery.
- Improvements to traffic flow in the parking areas were made at the Monument Hill area of Thermalito Afterbay.
- Beach sand was replaced at the North Thermalito Forebay area.

At Lake Del Valle a $1.2 million DBW-funded project was completed that includes new public restrooms, a shade structure, new landscaping, a fish cleaning table, a new boarding dock for boats, and a repaved road. In the campground area, 28 toilets were replaced with low-flow facilities.

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.

Implementation of the recreation plan began in 1995 with establishment of the Lake Oroville Recreation Advisory Committee. This committee, comprised 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 was completed on the Lime Saddle Boat Ramp improvements (DBW), an equestrian campground at Loafer Creek Recreation area, and lighting on Oroville Dam.
- Fishery and fishing improvements included development of a fish management and stocking plan, stocking chinook salmon, and development of fish shelters.

Most recreation and fish facilities were completed by 1999; certain elements of the plan may require time extensions to complete.

Fish Plantings

In 1999, the Department of Fish and Game continued its fish-planting activities at 12 SWP facilities. Total plantings of trout and chinook salmon decreased by nearly 45 percent in 1999 (Table 13-2).

At the Feather River Fish Hatchery and the Thermalito Afterbay rearing ponds, 10,690,700 fish were produced in 1999, up 3 percent from 1998. This includes 10,253,300 chinook salmon and 437,400 steelhead trout. Of the chinook salmon reared, 1,751,100 were fingerlings, 7,988,500 were advanced fingerlings, 376,800 were subcatchables, and 136,900 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.

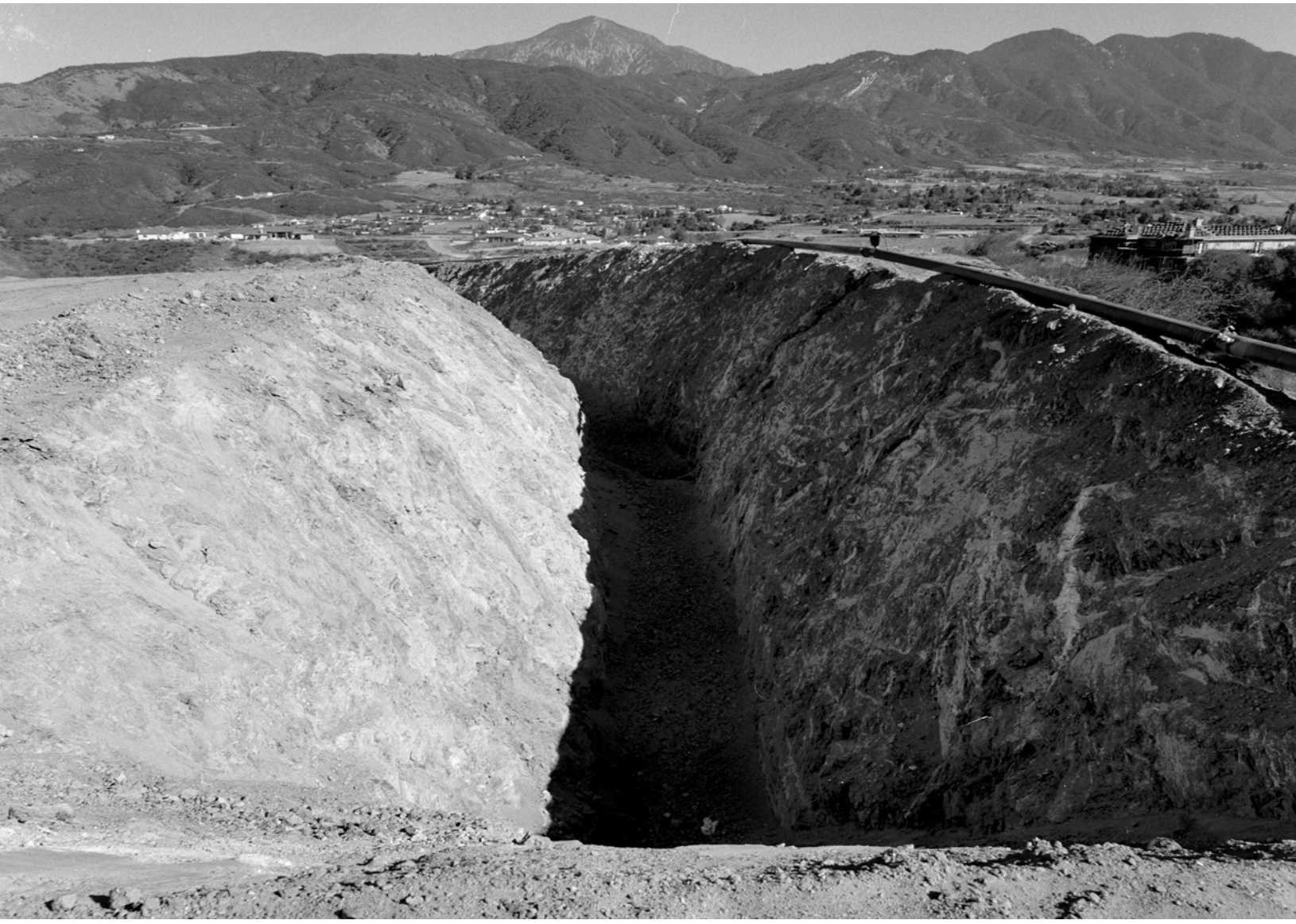
Table 13-2
Fish Planted in 1999
(Thousands)

Location and Size	*Eagle Lake Trout*	*Brook Trout*	*Rainbow Trout*	*Brown Trout*	*Chinook Salmon*	*Total*
Antelope Reservoir						
Catchable	32.7	12.0				44.7
Lake Davis						
Broodstock	0.2		1.6	0.2		2.0
Catchables	54.2					54.2
Fingerling	1,003.2		83.5			1,086.7
Frenchman Reservoir						
Fingerling	313.6		60.0			373.6
Lake Oroville						
Subcatchable				50.0	158.3	208.3
Fingerling					128.8	128.8
Thermalito Forebay						
Catchable	4.0		25.5			29.5
Lake Del Valle						
Catchable	0.9		36.8		15.0	52.7
Los Banos Reservoir						
Catchable			11.9			11.9
Pyramid Lake						
Catchables			2.1			
Castaic Lake						
Catchable			55.4			55.4
Castaic Lake Lagoon						
Catchable			32.3			32.3
Silverwood Lake						
Catchable			50.9			50.9
Lake Perris						
Catchable			63.5			63.5
Lake Skinner [a]						
Catchable			No Fish Planted			
California Aqueduct			No Fish Planted			
Total	**1,408.8**	**12.0**	**423.5**	**50.2**	**302.1**	**2,196.6**

[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



Construction of the East Branch Extension, Reach 1,
financed by water revenue bonds

Significant Events

- In July 1999, the Department implemented Phase I of the Systems Application Products program. SAP is an integrated software system used to run the various business functions of the Department. The SAP system provides most of the accounting and financing data required for financial analysis.

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 2000 through 2015.

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, 1999, are presented in Tables 14-1 and 14-2 on pages 187 and 188.

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;
- 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 2015 will total $378 million. Special capital requirements for revenue bond financing of these construction costs are projected at $25 million for a total capital requirement of $403 million. This projection includes construction and financing costs for the following significant SWP facilities planned for completion by 2015:

- Interim South Delta facilities
- Gorman Creek Channel modifications on the West Branch of the California Aqueduct
- Extension of the East Branch of the California Aqueduct

Most of these capital requirements will be financed from the projected sale of $200 million of revenue bonds. The remaining $203 million will be financed from current bond proceeds, capital resources revenues, and the transfer of excess revenues not needed for operation costs or debt service.

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 work essential for realizing full benefits from the SWP but 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 14-3
Allocation of Capital Expenditures
(Thousands of Dollars)

Facilities and Construction Divisions	*Expenditures Incurred Through 1999*	*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	569,334	1,000	570,334	478,971	70,661	20,702	0
Delta Facilities Division	406,272	77,882	484,154	436,268	0	47,886	0
North Bay Aqueduct	94,369	6	94,375	94,375	0	0	0
South Bay Aqueduct	80,787	747	81,534	59,861	7,532	14,141	0
California Aqueduct							
North San Joaquin Division	265,128	5,907	271,035	261,746	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	363,000	3,885	366,885	328,939	0	37,946	0
Santa Ana Division	264,982	1,038	266,020	233,988	0	32,032	0
West Branch	537,142	6,685	543,827	509,881	0	33,946	0
Coastal Branch	470,313	10,570	480,883	480,883	0	0	0
Subtotal, California Aqueduct	*2,792,495*	*65,594*	*2,858,089*	*2,695,667*	*0*	*162,422*	*0*
Other Project Facilities							
Small Hydroelectric Power Generating Facilities	91,727	0	91,727	91,727	0	0	0
Off-Aqueduct Power Generating Facilities	445,860	39,450	485,310	485,310	0	0	0
East Branch Enlargement	444,102	0	441,102	444,102	0	0	0
East Branch Extension	14,787	82,213	97,000	97,000	0	0	0
Coastal Branch Extension	32,680	0	32,680	32,680			
San Joaquin Drainage Facilities	53,153	52,385	105,538	0	0	0	105,538
Planning and Preoperations	55,647	58,078	113,725	113,725	0	0	0
Unassigned	761	816	1,577				1,577
Subtotal, Project Construction Expenditures	*5,099,900*	*378,173*	*5,478,073*	*5,031,069*	*78,193*	*261,706*	*107,115*
Other Capital Expenditures							
Davis-Grunsky Act Program	130,000		130,000	0	0	0	130,000
Total Capital Expenditures	**5,229,900**	**378,173**	**5,608,073**	**5,031,059**	**78,193**	**261,706**	**237,115**

[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 2015. Estimates of future capital expenditures include allowances for construction costs escalation of 3 percent per year from 2000 through 2001 and 4 percent per year from 2002 through 2015. Right-of-way costs are escalated at 4 percent per year from 2000 through 2015. 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 which were 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 Power Plant. Warne Power Plant costs are included in Line 10.

Line 7, East Branch Enlargement, includes expenditures for first-stage construction of the East Branch Enlargement, including the enlargement share of power plant costs at Mojave Siphon and Devil Canyon. (The remaining power plant costs are included in Line 10.) East Branch Enlargement costs by facility are presented in Table 14-4. Costs for Alamo Power Plant consist of expenditures for Unit 1 facilities allocated to enlargement. Construction of Unit 2 has been deferred.

All costs in Line 7 are allocated to and repaid by the seven Southern California contractors participating in the East Branch Enlargement.

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 power plant construction at Alamo, Mojave Siphon, and Devil Canyon are not included in this line.

Line 9, East Branch Extension, shows expenditures for Phase I of the extension of the East Branch of the California Aqueduct. The East Branch Extension will extend the California Aqueduct east from the Devil Canyon Power Plant 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. Construction began in October

1998 and is scheduled for completion in 2002. 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 Power Plants shown in Line 7 of Table 14-1. Estimated capital costs for facilities included in Line 10 are shown in Table 14-5.

Line 11, Additional Conservation Facilities, shows projected costs to plan and study additional conservation facilities. Specific planning activities and projected spending amounts for 2000 through 2015 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.

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 continue to 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, 1999, the Department had disbursed $129 million (including $8.5 million for administration) in grants and loans for local agencies throughout the State.

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

Table 14-4
East Branch Enlargement
Capital Costs by Facility

Facility	*Dollar Amounts (in millions)*
Aqueduct and siphons	115.3
Pearblossom Pumping Plant	70.1
Alamo Power Plant	5.0
Mojave Siphon Power Plant	49.6
Devil Canyon Power Plant and Second Afterbay	204.1
Total	**444.1**

Table 14-5
Estimated Capital Costs for Power Generation and Transmission Facilities

Facility	*Dollar Amounts (in millions)*
Power Plants	
Reid Gardner, Unit 4	307.9
Bottle Rock	120.9
South Geysers	49.6
Devil Canyon	36.8
Warne	84.5
Alamo	44.9
Mojave Siphon	32.7
Thermalito Diversion Dam	14.1
Subtotal	*691.4*
Transmission Lines	
Midway-Wheeler Ridge	10.7
Geysers-Lakeville	6.9
Total	**709.0**

Table 14-6
Estimated Future Costs for Planning Additional Conservation Facilities

Activity	*Project Expenditures (in millions)*
Future Water Supply	72.9
Other Planning Costs	17.3
Total	**90.2**

Table 14-7
Application of Revenue Bond Proceeds

Bond Series [a]	Construction Expenditures	Other Capital Requirements					Total Principal Amount of Bonds
		Reimbursement 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 East Branch Extension Bonds	43.0	0.0	3.0	0.0	4.0	7.0	50.0
Future Water System Facilities Bonds	132.2	0.0	7.1	0.0	10.9	18.0	150.2
Total	**2,696.3**	**2.6**	**258.4**	**14.8**	**2,619.9**	**2,895.7**	**5,592.0** [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 $3,377 million.

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 1999 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. The California Water Fund was used to finance $508 million or approximately 10 percent of the construction expenditures through 1999.

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, 1999, the Department had sold $5.4 billion of revenue bonds. That amount includes $2.4 billion of refunded bonds, leaving a total principal obligation of $3.0 billion.

Capital Resources. Capital resources financing is derived from payments and appropriations (including a portion of Tideland Oil Revenues) authorized by a variety of special contracts, cost-sharing agreements, and legislative actions concerning the SWP, plus accrued interest on these funds.

Capital resources revenues are deposited in the Central Valley Water Project Construction Fund and may be expended for 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, 1999. Of this total amount, $418 million were used for construction expenditures and $67 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, $20.9 million had been spent through December 31, 1999. The remaining $39.1 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, 1999, $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 $132 million for construction of SWP water system facilities and $18 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 2001.

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, 1999, 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 $94.4 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 2000 through 2015 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 2000 through 2015. 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 2000-2015. 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 2001 water charges to be billed July 1, 2000. 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 2001 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, 1999. Those costs presented in the financial analysis include allowances for price escalation.
- Pre-2000 charges in Appendix B represent charges as they should have been according to currently known conditions. Pre-2000 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 2000 and thereafter have been adjusted for any apparent overpayments or underpayments of pre-2000 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 revenue bond 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 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
- 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 periodically reviewed by USBR and the Department. The most recent review of the percentage paid by 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 2000 through 2015.

Table 14-8
Effect of Revenue Bond Proceeds on Project Interest Rate
(Millions of Dollars)

Project	Proceeds Included in 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	Percentage of Total Amount Included in Calculating Project Interest Rate
Devil Canyon-Castaic Project Revenue Bonds	125.3	1.5	1.4	125.2	139.2	90.0
Pyramid Project Revenue Bonds (Series A)	71.2	0.5	1.1	71.8	95.8	75.0
Alamo Project Bond Anticipation Note	16.8	0.1	0.3	17.0	24.4	70.0
Small Hydro Project I Revenue Bonds (Series D)	25.4	0.2	1.5	26.7	37.5	71.0
Alamo Project Revenue Bonds (Series F)	38.9	0.3	0.7	39.3	50.0	79.0
Power Facilities						
Revenue Bonds (Series H)						
Facility						
Pyramid Project	5.0	0.0	0.1	5.1	5.1	100.0
Alamo Project	1.7	0.0	0.0	1.7	1.7	100.0
Small Hydro Project I	25.2 [a]	0.2	0.4	25.4	35.6	71.0
Water System Revenue Bonds (Series J)						
Facility						
Pyramid Project	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.

Table 14-1
Capital Requirements and Financing, December 31, 1999
(Thousands of dollars)

Line Number	Line Item	Calendar year 1952-1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total 2000-2015	Total 1952-2015
	Capital Requirements																			
1.	Initial Project Facilities	2,202,316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,202,316
2.	North Bay Aqueduct, Phase II	90,419	1	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	6	90,425
3.	Delta and Suisun Marsh Facilities	252,210	0	34,600	17,584	12,840	11,258	1,049	551	0	0	0	0	0	0	0	0	0	77,882	330,092
4.	Final 4 Units at Banks Pumping Plant	43,673	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43,673
5.	Coastal Branch Aqueduct, Phase II	480,739	9,782	788	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10,570	491,309
6.	West Branch Aqueduct	196,436	6,663	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,685	203,121
7.	East Branch Enlargement	444,088	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	444,088
8.	East Branch Improvements	159,824	4,849	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,893	164,717
9.	East Branch Extension	14,787	14,733	33,740	33,740	0	0	0	0	0	0	0	0	0	0	0	0	0	82,213	97,000
10.	Power Generation and Transmission Facilities	669,528	450	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	0	0	39,450	708,978
11.	Additional Conservation Facilities	144,978	4,185	4,815	5,600	5,304	4,814	4,974	5,223	5,484	5,758	6,047	6,348	6,348	6,348	6,348	6,348	6,348	90,292	235,270
12.	San Joaquin Drainage Facilities	53,153	2,094	2,309	2,546	2,740	2,877	3,020	3,172	3,330	3,496	3,671	3,855	3,855	3,855	3,855	3,855	3,855	52,385	105,538
13.	Other Costs	347,749	0	10,734	(94)	1,087	1,027	80	82	87	93	95	101	101	101	101	101	101	13,797	361,546
14.	**Total Project Construction Expenditures**	**5,099,900**	**42,757**	**90,053**	**62,377**	**24,973**	**22,977**	**12,123**	**12,028**	**11,901**	**12,347**	**12,813**	**13,304**	**13,304**	**13,304**	**13,304**	**10,304**	**10,304**	**378,173**	**5,478,073**
15.	Davis-Grunsky Act Program Costs	130,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130,000
16.	Special Capital Requirements Under Revenue Bond Financing	581,007	0	4,105	15,400	0	5,495	0	0	0	0	0	0	0	0	0	0	0	25,000	606,007
17.	**Total Capital Requirements**	**5,810,907**	**42,757**	**94,158**	**77,777**	**24,973**	**28,472**	**12,123**	**12,028**	**11,901**	**12,347**	**12,813**	**13,304**	**13,304**	**13,304**	**13,304**	**10,304**	**10,304**	**403,173**	**6,214,080**
18.	Power Facilities Capital Requirements	1,248,942	450	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	0	0	39,450	1,288,392
19.	Water Facilities Capital Requirements	4,561,965	42,307	91,158	74,777	21,973	24,472	9,123	9,028	8,901	9,347	9,813	10,304	10,304	10,304	10,304	10,304	10,304	363,723	4,925,688
	Capital Financing Sources																			
	Power Revenue Bond Proceeds																			
20.	Power Revenue Bonds through Series H	1,162,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,162,458
	Water Revenue Bond Proceeds																			
21.	East Branch Enlargement, Current Bonds	485,274	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	485,274
22.	East Branch Extension, Current Bonds	20,900	14,733	24,327	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39,060	59,960
23.	East Branch Extension, Future Bonds	0	0	0	50,000	0	0	0	0	0	0	0	0	0	0	0	0	0	50,000	50,000
24.	Water System Facilities, Current Bonds	1,399,589	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,399,589
25.	Water System Facilities, Future Bonds	0	0	45,200	60,000	0	45,000	0	0	0	0	0	0	0	0	0	0	0	150,200	150,200
26.	*Subtotal, Water Revenue Bonds*	*1,905,763*	*14,733*	*69,527*	*110,000*	*0*	*45,000*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*239,260*	*2,145,023*
	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	0	0	0	0	1,452,452
28.	Davis-Grunsky Act Program Bond Proceeds	130,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	508,056
30.	Interim Financing	27,837	13,163	7,088	(39,313)	16,646	(25,421)	0	0	0	0	0	0	0	0	0	0	0	(27,837)	0
31.	Application of Capital Resources Revenues to Construction	568,151	14,861	13,043	2,590	3,827	4,393	7,623	7,528	7,401	7,847	8,313	8,804	8,804	8,804	8,804	5,804	5,804	124,250	692,401
32.	Revenue Transfers Applied	56,190	0	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	67,500	123,690
33.	*Subtotal, Other Capital Financing*	*2,742,686*	*28,024*	24,631	*(32,223)*	*24,973*	*(16,528)*	*12,123*	*12,028*	*11,901*	*12,347*	*12,813*	*13,304*	*13,304*	*13,304*	*13,304*	*10,304*	*10,304*	*163,913*	*2,906,599*
34.	**Total Financing of Capital Requirements**	**5,810,907**	**42,757**	**94,158**	**77,777**	**24,973**	**28,472**	**12,123**	**12,028**	**11,901**	**12,347**	**12,813**	**13,304**	**13,304**	**13,304**	**13,304**	**10,304**	**10,304**	**403,173**	**6,214,080**

Table 14-2
State Water Project Revenues and Expenditures, December 31, 1999
(Thousands of dollars)

Line Number	Line Item	Calendar year 1952-1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2000-2015	1952-2015
	Project Revenues																			
1.	Capital resources revenues	819,790	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	819,790
	Water Contractor Payments																			
2.	Transportation capital	2,691,768	132,409	138,503	143,259	140,953	140,904	140,853	139,725	139,725	139,725	139,726	139,726	139,726	139,726	138,282	137,203	135,436	2,225,881	4,917,649
3.	Transportation minimum	3,642,225	262,395	194,235	238,687	223,316	221,049	233,774	228,526	230,870	249,017	249,685	249,375	250,102	250,098	186,974	153,573	141,439	3,563,115	7,205,340
4.	Transportation variable	1,077,309	113,337	100,031	121,778	116,236	107,774	94,301	101,496	96,415	81,598	87,035	100,291	97,390	107,540	131,569	145,371	151,232	1,753,394	2,830,703
5.	Delta Water Charge	1,420,394	98,700	99,001	100,739	100,723	101,380	101,879	102,361	102,578	103,025	103,240	103,461	103,685	103,696	103,707	103,719	103,740	1,635,634	3,056,028
6.	East Branch Enlargement payments	302,471	45,727	45,866	46,385	45,841	44,407	44,385	44,999	45,032	44,119	44,174	44,249	44,447	44,509	44,527	43,966	44,434	717,067	1,019,538
7.	East Branch Extension payments	294	4,803	4,799	4,801	9,195	9,191	9,189	9,190	9,191	9,188	9,194	9,195	9,193	9,195	9,331	9,328	9,328	134,311	134,605
8.	Coastal Extension Payments	3,909	2,260	2,260	2,260	2,260	2,260	2,260	2,260	3,216	3,215	3,216	3,215	3,215	3,216	3,214	3,214	3,215	44,756	48,665
9.	Water Revenue Bond Surcharge	185,311	55,346	54,965	56,562	55,751	56,431	57,033	56,131	55,937	56,675	56,786	56,876	56,992	57,093	56,768	58,909	57,636	905,891	1,091,202
10.	*Subtotal water contractor payments*	*9,323,681*	*714,977*	*639,660*	*714,471*	*694,275*	*683,396*	*683,674*	*684,688*	*682,964*	*686,562*	*693,056*	*706,388*	*704,750*	*715,073*	*674,372*	*655,283*	*646,460*	*10,980,049*	*20,303,730*
11.	Revenue bond cover adjustments	0	(40,937)	(40,868)	(40,711)	(39,132)	(38,990)	(40,604)	(40,558)	(40,714)	(44,443)	(44,463)	(44,487)	(44,566)	(44,660)	(36,567)	(36,091)	(33,815)	(651,606)	(651,606)
12.	Rate management adjustments	(62,550)	(33,000)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(640,500)	(703,050)
	Other Revenues																			
13.	Federal payments for project operating costs	165,014	11,111	11,984	11,542	11,827	11,827	11,827	11,827	11,827	11,827	11,827	11,827	11,839	11,839	11,839	11,839	11,839	188,448	353,462
14.	Appropriations for operating costs allocated to recreation	16,657	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,657
15.	Davis-Grunsky loan repayments	41,513	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	22,400	63,913
16.	Revenue Bond Proceeds	485,568	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	485,568
17.	Interest Earnings on Operating Revenue	553,141	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200	83,200	636,341
18.	Oroville-Thermalito Revenues	249,279	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	249,279
19.	Miscellaneous revenues	150,000	10,017	47,342	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57,359	207,359
20.	*Subtotal, other revenues*	*1,661,172*	*27,728*	*65,926*	*18,142*	*18,427*	*18,427*	*18,427*	*18,427*	*18,427*	*18,427*	*18,427*	*18,427*	*18,439*	*18,439*	*18,439*	*18,439*	*18,439*	*351,407*	*2,012,579*
21.	Total operating revenues	10,922,303	668,768	624,218	651,402	633,070	622,333	620,997	622,057	620,177	620,046	626,520	639,828	638,123	648,352	615,744	597,131	590,584	10,039,350	20,961,653
22.	Total operating revenues and Capital Resources Revenues	11,742,093	668,768	624,218	651,402	633,070	622,333	620,997	622,057	620,177	620,046	626,520	639,828	638,123	648,352	615,744	597,131	590,584	10,039,350	21,781,443
	Project Expenses																			
23.	Project operations, maintenance, and power costs	4,591,377	343,884	377,862	402,081	367,169	358,216	347,645	339,912	343,002	325,522	331,724	343,916	340,397	348,837	352,975	336,050	338,439	5,597,631	10,189,008
24.	Deposits to Replacement Reserves	97,208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97,208
25.	Deposits to special reserves	270,005	57,959	(24,178)	(21,721)	(3,054)	(4,549)	(4,672)	5,072	100	2,697	2,845	4,576	7,765	9,983	5,594	8,618	16,864	63,899	333,904
26.	Capital resources expenditures	615,701	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	615,701
	Payments of Debt Service																			
27.	Principal repayments on bonds sold through December 31, 1999 (current bonds)	1,381,035	91,190	94,944	98,940	94,240	98,894	110,095	114,860	120,600	141,520	148,915	155,900	162,485	170,715	147,175	149,655	139,870	2,039,998	3,421,033
28.	Interest on bonds sold through December 31, 1999 (current bonds)	4,432,607	175,735	171,090	165,842	160,725	155,779	150,714	144,992	139,250	133,091	125,808	118,215	110,262	101,589	92,494	85,307	77,907	2,108,800	6,541,407
29.	Future Water Bond principal repayments	0	0	0	340	1,485	1,575	2,185	2,315	2,450	2,580	2,745	2,900	3,065	3,255	3,725	3,940	4,175	36,735	36,735
30.	Future Water Bond interest payments	0	0	0	1,420	8,005	7,918	10,530	10,406	10,275	10,136	9,983	9,821	9,649	9,473	9,281	9,061	8,829	124,787	124,787
31.	**Total Principal**	1,381,035	91,190	94,944	99,280	95,725	100,469	112,280	117,175	123,050	144,100	151,660	158,800	165,550	173,970	150,900	153,595	144,045	2,076,733	3,457,768
32.	**Total Interest**	4,432,607	175,735	171,090	167,262	168,730	163,697	161,244	155,398	149,525	143,227	135,791	128,036	119,911	111,062	101,775	94,368	86,736	2,233,587	6,666,194
33.	*Subtotal Debt Service*	*5,813,642*	*266,925*	*266,034*	*266,542*	*264,455*	*264,166*	*273,524*	*272,573*	*272,575*	*287,327*	*287,451*	*286,836*	*285,461*	*285,032*	*252,675*	*247,963*	*230,781*	*4,310,320*	*10,123,962*
34.	**Total Operating Expenses and Debt Service**	11,387,933	668,768	619,718	646,902	628,570	617,833	616,497	617,557	615,677	615,546	622,020	635,328	633,623	643,852	611,244	592,631	586,084	9,971,850	21,359,783
35.	Net System Revenues	354,160	0	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	67,500	421,660
	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	0	0	0	0	297,970
37.	Revenues used for capital expenditures	56,190	0	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	67,500	123,690

Table 14-10
Operations, Maintenance, Power, and Replacement Costs, by Facility, Composition, and Purpose
(Thousands of dollars)

Feature	Calendar year																		Total
	1962-1999	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016-2035*	
Project Facility																			
Feather River facilities	141,660	8,664	6,413	5,287	5,433	4,596	4,587	4,569	4,573	4,573	4,575	4,568	4,716	4,718	4,732	4,754	4,753	95,088	318,259
North Bay Aqueduct	21,741	2,670	2,641	2,912	3,055	3,083	2,948	2,898	2,915	2,928	2,942	2,925	2,976	2,988	3,040	3,122	3,133	64,005	132,922
Delta facilities	389	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	389
Suisun Marsh	21,372	2,180	3,140	3,385	3,468	3,457	3,457	3,457	3,457	3,457	3,457	3,457	2,795	2,795	2,795	2,795	2,795	55,891	127,610
South Bay Aqueduct	143,941	10,593	11,361	11,354	11,967	12,055	11,392	11,132	11,188	11,225	11,264	11,163	11,361	11,392	11,598	11,919	11,909	238,764	565,578
California Aqueduct																			
Delta to Edmonston	1,867,211	146,921	127,167	186,553	151,426	136,490	145,467	159,226	161,102	139,404	140,967	159,803	151,679	154,926	176,412	172,688	179,092	3,819,529	8,176,062
Edmonston to Perris	1,515,087	95,842	145,047	107,618	106,393	125,903	106,979	94,272	95,054	99,457	104,329	98,817	106,515	112,346	116,825	133,597	130,329	3,048,929	6,343,340
West Branch	32,919	(675)	(645)	(1,429)	(2,407)	(12,700)	(12,692)	(15,851)	(15,988)	(16,272)	(16,613)	(17,454)	(17,400)	(18,124)	(17,766)	(17,999)	(18,732)	(421,148)	(590,976)
Coastal Branch	83,092	11,111	10,497	10,818	11,508	11,662	10,715	10,335	10,385	10,434	10,487	10,351	10,599	10,640	10,919	11,352	11,338	227,541	483,784
Off-Aqueduct power generating facilities	780,593	49,931	51,878	53,701	53,651	53,601	53,601	53,601	53,601	53,601	53,601	53,571	53,471	53,471	30,735	137	137	0	1,502,882
Recreation, planning, and CVP negotiations	0	0	582	667	683	683	683	683	683	683	683	683	683	683	683	683	683	13,669	23,797
Water quality monitoring	220,034	19,117	22,073	23,332	23,950	21,193	20,188	15,270	15,712	15,712	15,712	15,712	12,683	12,683	12,683	12,683	12,683	240,255	731,675
Davis-Grunsky Act Program	5,455	262	289	312	320	320	320	320	320	320	320	320	319	319	319	319	319	6,379	16,852
Subtotal	*4,833,494*	*346,616*	*380,443*	*404,510*	*369,447*	*360,343*	*347,645*	*339,912*	*343,002*	*325,522*	*331,724*	*343,916*	*340,397*	*348,837*	*352,975*	*336,050*	*338,439*	*7,388,902*	*17,832,174*
Payments to\credits from PG&E under Comprehensive Agreement	(47,701)	(2,732)	(2,581)	(2,429)	(2,278)	(2,127)	0	0	0	0	0	0	0	0	0	0	0	0	(59,848)
Total OMP&R Costs	**4,785,793**	**343,884**	**377,862**	**402,081**	**367,169**	**358,216**	**347,645**	**339,912**	**343,002**	**325,522**	**331,724**	**343,916**	**340,397**	**348,837**	**352,975**	**336,050**	**338,439**	**7,388,902**	**17,772,326**
Composition																			
Salaries and expenses of headquarters personnel	1,049,834	91,535	89,058	100,879	97,856	98,835	102,395	95,939	97,286	95,235	96,312	95,229	91,434	90,398	94,134	91,049	90,671	1,476,977	4,045,055
Salaries and expenses of field personnel	1,878,232	126,900	86,242	119,244	114,040	112,648	112,510	103,427	110,536	109,797	109,611	109,566	112,963	112,217	111,139	114,479	111,019	2,581,089	6,235,660
Pumping power																			
Used by pumping plants	2,095,709	174,538	251,571	228,237	186,812	187,542	180,654	190,570	181,871	172,841	178,545	192,928	192,368	202,224	227,285	242,067	248,737	5,672,719	11,007,218
Produced by generation plants	(957,534)	(96,538)	(98,569)	(97,828)	(83,189)	(92,560)	(101,792)	(103,902)	(100,569)	(106,229)	(106,622)	(107,655)	(110,116)	(109,750)	(110,595)	(111,959)	(112,402)	(2,347,423)	(4,955,232)
Payments to/credits from PG&E under Comprehensive Agreement	(47,701)	(2,732)	(2,581)	(2,429)	(2,278)	(2,127)	0	0	0	0	0	0	0	0	0	0	0	0	(59,848)
Off-Aqueduct power generating facilities requirement	780,593	49,931	51,878	53,701	53,651	53,601	53,601	53,601	53,601	53,601	53,601	53,571	53,471	53,471	30,735	137	137	0	1,502,882
Oroville-Thermalito insurance premiums	10,503	250	263	277	277	277	277	277	277	277	277	277	277	277	277	277	277	5,540	20,434
Less: Portion of costs incurred during construction	(121,051)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(121,051)
Subtotal	*4,688,585*	*343,884*	*377,862*	*402,081*	*367,169*	*358,216*	*347,645*	*339,912*	*343,002*	*325,522*	*331,724*	*343,916*	*340,397*	*348,837*	*352,975*	*336,050*	*338,439*	*7,388,902*	*17,675,118*
Deposits to replacement reserves	97,208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97,208
Total OMP&R Costs	**4,785,793**	**343,884**	**377,862**	**402,081**	**367,169**	**358,216**	**347,645**	**339,912**	**343,002**	**325,522**	**331,724**	**343,916**	**340,397**	**348,837**	**352,975**	**336,050**	**338,439**	**7,388,902**	**17,772,326**
Project Purpose																			
Water supply and power generation	4,593,433	324,771	357,180	381,320	345,919	337,114	324,448	317,840	320,571	303,181	309,348	321,599	318,450	326,947	330,935	313,954	316,471	6,948,548	16,792,029
Payments to/credits from PG&E under Comprehensive Agreement	(47,701)	(2,732)	(2,581)	(2,429)	(2,278)	(2,127)	0	0	0	0	0	0	0	0	0	0	0	0	(59,848)
Recreation and fish and wildlife enhancement	91,647	9,299	10,325	10,732	10,761	10,461	10,430	9,307	9,666	9,575	9,610	9,552	9,169	9,111	9,260	9,313	9,185	184,700	432,103
Flood control	2,912	268	297	316	325	326	325	323	323	324	324	323	324	325	326	329	329	6,574	14,593
Miscellaneous purposes																			
Federal share, San Luis, and Delta facilities	139,221	11,111	11,984	11,542	11,827	11,827	11,827	11,827	11,827	11,827	11,827	11,827	11,839	11,839	11,839	11,839	11,839	236,780	564,449
Other (Davis-Grunsky, drainage, City of Los Angeles)	6,281	1,167	657	600	615	615	615	615	615	615	615	615	615	615	615	615	615	12,300	29,000
Total OMP&R Costs	**4,785,793**	**343,884**	**377,862**	**402,081**	**367,169**	**358,216**	**347,645**	**339,912**	**343,002**	**325,522**	**331,724**	**343,916**	**340,397**	**348,837**	**352,975**	**336,050**	**338,439**	**7,388,902**	**17,772,326**

Table 14-11
Annual Debt Service on Bonds Sold through December 31, 1999
(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
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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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 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 2000 through 2015.

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, 1999. 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 debt 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 1952-99 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
- 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 189.

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 2002. 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, 1999, $61.9 million had been spent for replacement costs; the balance of the replacement reserve as of that date was $20.1 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
- deposits to and withdrawals from operating reserves to meet day-to-day cash flow requirements

The 1952-99 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
- 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, 1999, show the total

principal and interest payments on bonds sold to date. Table 14-11 on page 190 summarizes payments on general obligation bonds (Series A through Y water bonds), power revenue bonds by project, and water system revenue bonds (Series A through V).

Lines 29 and 30, Payments on Projected Future Water Bonds, include the projected annual debt 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 the total amount of repayments made to the California Water Fund to reimburse the fund for monies expended for construction of the State Water Resources Development System.

Repayment of the California Water Fund was completed in 1998 after reimbursements totaling $508 million. In addition to the $297 million of repayments shown in Line 36, $211 million of reimbursement was credited to the SWP as 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 2001 and 2006. 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 2001 and 2006, 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 1999 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 2000 through 2001 and at 4 percent per year for 2002 through 2015. The escalation rates for future power sources vary, depending on the source of energy.

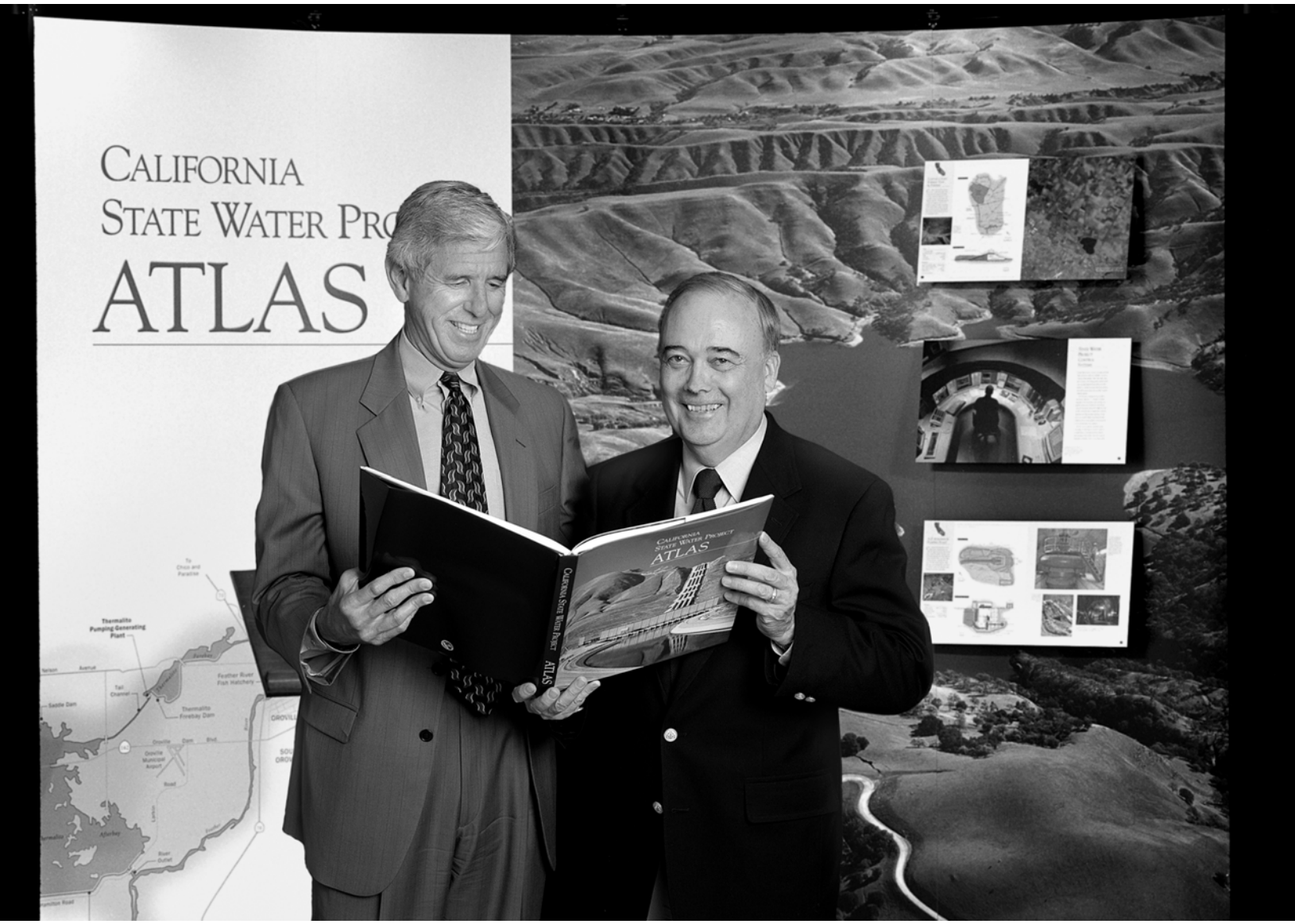
Table 14-12
Estimated Unit Water Charges for 1999 and 2004, by Service Area
(Dollars per Acre-Foot)

Service Area and Charge	2001		2006	
	Unescalated	*Escalated*	*Unescalated*	*Escalated*
Feather River Area				
Capital; Operations, Maintenance, and Replacement (OM&R)	73	73	26	26
North Bay Area				
Capital; OM&R	160	160	151	152
Power	13	13	14	15
Total	**173**	**173**	**165**	**167**
South Bay Area				
Capital; OM&R	90	90	88	89
Power	27	27	29	31
Total	**117**	**117**	**117**	**120**
Coastal Area				
Capital; OM&R	491	491	489	490
Power	71	71	76	86
Total	**562**	**562**	**565**	**576**
San Joaquin Area				
Capital; OM&R	52	52	50	52
Power	14	14	14	16
Total	**66**	**66**	**64**	**68**
Southern California Area				
Capital; OM&R	151	151	138	140
Power	75	75	78	79
Total	**226**	**226**	**216**	**219**

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



Director Hannigan and former
Director Kennedy reviewing the
California State Water Project Atlas

Significant Events

- The Office of Water Education provided information on Y2K preparedness to water agencies throughout California and helped coordinate Department information with the overall State government effort. The year-end effort capped a calendar of events resulting in news releases to the media.
- News events in 1999 included the fifth straight wet year and full deliveries to the State Water Project, cutbacks in pumping from the Delta for fishery protection, progress on the Colorado River Agreement, and other SWP-related events.
- In February, the Governor announced the appointment of Thomas M. Hannigan as Director of the Department of Water Resources.
- The *California State Water Project Atlas*, a new publication of SWP facilities with photographs and statistics, was distributed to the State Water Contractors and major water organizations. Sales to the public are scheduled to begin in 2000.
- OWE participated in educating Department employees, stakeholders, and the public about the lengthy process required for renewal of the Department's federal license to operate hydroelectric and related facilities at Oroville, including Oroville Dam.

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 sites, SWP visitors centers and tours, brochures, exhibits, and special events.

SWP Information and Education Programs

Media Outreach

Y2K Preparedness. OWE's role in preparing SWP facilities and the Department for the rollover to year 2000 included briefings with Department Y2K project management, issuing news releases announcing SWP and California Data Exchange Center readiness, and coordinating with the Department of Information Technology on inquiries from the public and news media.

A brochure emphasizing Y2K readiness was written by the Department and distributed to California's 4,200 water agencies. In addition, OWE information staff supported the Office of Emergency Services in its New Year's Eve rollover coverage.

Flood Preparedness. The Internet provided the public and news media with information on flood preparedness and emergency work. A new flood update site was augmented in 1999 with maps of the Sacramento and San Joaquin river systems and the State's hydrologic regions. These sites can be downloaded in different formats. During winter 1999, the news media was informed of Web sites where they could retrieve Department reports of reservoir conditions and river flows. Many television stations began using graphs generated by CDEC and interpreted by Department information officers.

OWE participated with other Department units in the Governor's annual Winter Weather and Flood Preparedness Week activities in October, coordinated by OES. The Joint Operations Center was once again the site of this event and news conference.

News Events. The Department notified news media of the following major SWP and related highlights of 1999:

- announcement to SWP contractors of full SWP deliveries for 1999;
- successful negotiations among the largest California water agencies that utilize Colorado River water supplies;
- completion of major repairs to the east and west branches of the California Aqueduct;
- completion of the Feather River Fish Hatchery expansion project and announcement of a subsequent spawning run;
- launching of a project to revitalize the bass fishery at Silverwood Lake;
- initiation of a series of public meetings to gather information and comments for the updated Department bulletin on the State's groundwater resources, scheduled for completion in 2002;
- installation of barriers in the Delta to prevent Chinese mitten crabs from overwhelming fish salvage operations at SWP and Central Valley Project facilities; and
- publication of the *California State Water Project Atlas*.

Community Relations

OWE developed the Lake Oroville recreation Internet Web site which has information for tourists on the lake's recreation opportunities and other area facilities and attractions. A video with scenes of salmon

returning to the Feather River Fish Hatchery was produced and posted on the Web site. In addition, the Department provided photography support to the City of Oroville and the Oroville Area Chamber of Commerce for various community events. Other activities for the Oroville area are listed in the video projects section below.

State Sesquicentennial

Commemoration of California's 150th year of statehood was a special focus of OWE during 1999. Traveling exhibits showing "150 Years of Water History," supplemented by a brochure, were displayed in dozens of California communities.

Publications

SWP Brochures. Revisions continued in 1999 on the 26 individual publications in the State Water Project Brochure Series, including the revised Project Operations Center, Edmonston, and a new Oroville recreation brochure. An ordering form was placed on the Internet for the convenience of teachers and the general public. More than 100,000 SWP brochures were distributed statewide in 1999.

DWR News. The spring issue of *DWR News* featured the Delta invasion by Chinese mitten crabs, an explanation of the effects on the SWP of the 1998 deregulation of the electrical industry, construction of the East Branch Extension, and prospects for future water recycling in the State.

As part of the anniversary of statehood, the fall issue was primarily devoted to a review of 150 years of water history. Other articles covered the relicensing of the Oroville-Thermalito Complex, operation of the Yolo Bypass, Department support for salmon revival on the Merced River, and masterplanning flood protection in the Central Valley.

E-News. For the past several years, the Department has made a daily e-mail distribution to Department management of major newspaper articles of interest on the SWP and the Department. Distribution has widened to include several thousand individuals and agencies throughout the State, SWP contractors, municipal and private water agencies, other government departments, and educators and librarians.

DWR People. The Department's employee newsletter continued as a quarterly publication during 1999. Stories spotlight employee individual and team accomplishments, skills, awards, promotions, retirements, and other news items. Employee communication is also promoted by *DWR Update*, the employee-only online newsletter that provides accounts of Department changes and events, employee assignments and accomplishments, news items on statewide water issues, and various announcements.

Video

Lake Oroville. To promote attendance at Oroville's Feather Fiesta Days, a public service announcement was created and airtime purchased on six Northern California television stations (one Spanish language). This resulted in record attendance for the Hyatt Power Plant tour. Another public service announcement encouraged attendance at Oroville's Fourth of July event and fireworks display.

SWP Construction and Related Projects. The Department videotaped the East Branch Extension groundbreaking and construction; dedication of the Merced River Fish Hatchery; and round-the-clock repairs of aqueduct pools 54 and 49. Other video projects in 1999 included aerial mapping of the California Aqueduct with Global Positioning Satellite identification; efforts to reduce agricultural drainage into the San Joaquin River; and audio and videotaping of meetings, press conferences, and public hearings for the CALFED Bay-Delta Program throughout the State. Videotaping support was also provided to the Delta Protection Commission, Delta levee work, and environmental mitigation.

OWE provided support to Central Valley flood preparedness efforts by producing and distributing public service announcements on how to prepare sandbags to local television stations. This was supplemented by community outreach efforts in Oroville and Los Banos with local emergency service coordinators.

Recognition. The Department's Video unit won industry awards for the children's water education video *Water: Who Needs It*? from Cinema in Industry and the California Association of Public Information Officials.

Photography

The Department's photography unit provided documentation of fishery restoration at Silverwood Lake and coverage of both the fish ladder opening and the Salmon Festival at Oroville.

Other projects included monthly photo-progress reports on the construction of the East Branch Extension and other Southern California projects.

Visitors Centers Program and Promotion

During 1999, 632,703 visitors were welcomed at the five SWP visitors centers and facilities listed in Table 15-1.

Table 15-1
Visitor-Days Recorded in 1999, by Location

Field Division	*Visitor-Days*
Oroville	277,261
Delta	1,646
San Luis	212,693
San Joaquin	4,165
Southern	136,938
Total	**632,703**

Exhibits were updated at Romero and Vista del Lago visitors centers. Revised SWP facilities maps, featuring the location of the SWP visitors centers, were produced and distributed. SWP recreation display maps at major highway rest stops were repaired or replaced.

Promotional brochures for Vista del Lago, San Luis, and Oroville visitors centers were placed in hotels and travel agencies. Newspaper and magazine ads were also prepared to promote Oroville recreation.

Travel planners were encouraged to schedule trips for senior groups to SWP visitors centers. Tabletop displays were set up at travel conferences and promotional items, such as tote bags and sports bottles, were distributed.

SWP Tours

During 1999, the Department welcomed 625 visitors from the following countries: China, Japan, India, Egypt, the Netherlands, New Zealand, Canada, Australia, Korea, Taiwan, Tanzania, the Philippines, Portugal, and several Central Asia republics.

A year 2000 calendar derived from the *California State Water Project Atlas* graphics and text was produced and distributed to visitors touring the SWP.

Evaluations of Visitors Centers

Staff conducted evaluation surveys at Vista del Lago, Romero, and Oroville visitors centers. A total of 1,044 visitors participated in the surveys. Results showed a high level of satisfaction with information provided at these facilities.

Water Safety Education

The Department published a Spanish version of the *Albert and Einstein Water Safety Activity* coloring book, designed to increase children's awareness of the dangers of playing near the California Aqueduct.

The English and Spanish aqueduct safety radio messages, "Warning! Danger Lurking in California" and "Notorious Killer" water safety spots, were produced to appeal to young adult males. The announcements were targeted during early summer to listeners in the lower San Joaquin and Antelope Valleys.

Water safety video messages were also played to visitors at the annual Cal Expo Boat Show and Sportsmen's Expo in Sacramento.

Graphic Services Displays and Exhibits

During 1999, the Department created the following items related to the SWP:

- exhibits, videos, and informational materials for use at the spring and fall Association of California Water Agencies conferences;
- exhibit and presentation boards depicting repairs at milepost 54;
- League of California Cities conference exhibit providing information on sources of California water, emphasizing the SWP;
- exhibits and materials promoting recreation along the SWP for the Sportsmen's Expo;
- revised and updated outdoor display kiosks at Lake Davis and Frenchman Lake, with information about the lakes and the SWP;

- Devil Canyon Power Plant lobby display describing power plant and hydroelectric generation, with an overview of the SWP; and
- a lobby display for the Lake Oroville Visitors Center.

School Education Program

The program's goal is to provide students and educators with a statewide perspective on water issues and concepts. The Department develops and promotes high quality materials, provided free to schools, educators, and water districts.

Key projects for 1999 included

- a single video that combined the productions, *The Water Cycle, Water: Who Needs It?,* and a 30-second water safety animation for children in grades Kindergarten-6 was produced.
- promotion of the Department's new Children's Video Series and Teacher Activity Packets at conferences of the California Science Teachers Association, and the Association of Resource Conservation Districts. The packet provides instructors with materials that can be easily reproduced at very low cost.
- display of the Department's children's exhibits at the ACWA "School Open House." Water agencies from around the State had the opportunity to view all the Department's children's exhibits, including one on the California Aqueduct.
- education materials developed for the Lake Oroville Visitors Center.
- The Water Facts and Fun catalog and order form for education materials were updated.
- the Department coordination and participation in Water Education Committee meetings.
- Department participation in a State summit to develop a plan for environmental education.
- Department cosponsorship of the Environmentality Campaign for fifth grade students, with the State of California and the Walt Disney Corporation.
- The Department provided assistance to the Department of Education's Regional Environmental Education Coordinators and the Aquatic Outreach Institute's Educator Conference on Creeks, Wetlands and Watersheds.

Water Awareness Month Activities

During May 1999, the Department, for the twelfth consecutive year, celebrated Water Awareness Month. The theme for the observance was *Use Water Wisely: It's a Way of Life*.

The Department and water agencies throughout the State developed a water education teacher's kit for grades K-6. Approximately 4,000 kits were distributed statewide.

The Department celebrated Water Awareness Month at a series of special events, including

- May 8, Hyatt Power Plant Open House at Oroville Dam. Oroville Field Division sponsored this event, timed to coincide with Feather Fiesta Days, a major Oroville community festival.
- May 15, California Aqueduct Biking Event—a ride along a 28-mile portion of the California Aqueduct in the Antelope Valley of Southern California. Southern Field Division jointly sponsored this event with local bike, trail, and environmental groups.
- May 15, Kids' Fishing Derby at San Luis Reservoir. San Luis Field Division cosponsored this tenth annual event at O'Neill Forebay, with the Department of Parks and Recreation and the Four Rivers Natural History Association.
- May 21, Edmonston Pumping Plant Water Awareness Event—a celebration of California's Sesquicentennial with activities including fishing and demonstrations on water safety and efficient water use. The Department's San Joaquin Field Division hosted 120 students from schools in the Kern County communities of Taft and Bakersfield. The event was covered by regional news media.

Information in this chapter was contributed by the Office of Water Education.

Appendix B
Data and Computations Used to Determine 2001 Water Charges

Appendix B

Data and Computations

Used to

Determine 2001 Water Charges

Contents

Figures

Tables

Tables (continued)

Tables (continued)

Appendix B
Data and Computations
Used to
Determine 2001 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 2001. The information is based on established data about the SWP, both known and projected, as of June 30, 2000.

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 Power Plant, and South Geysers Power Plant)

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

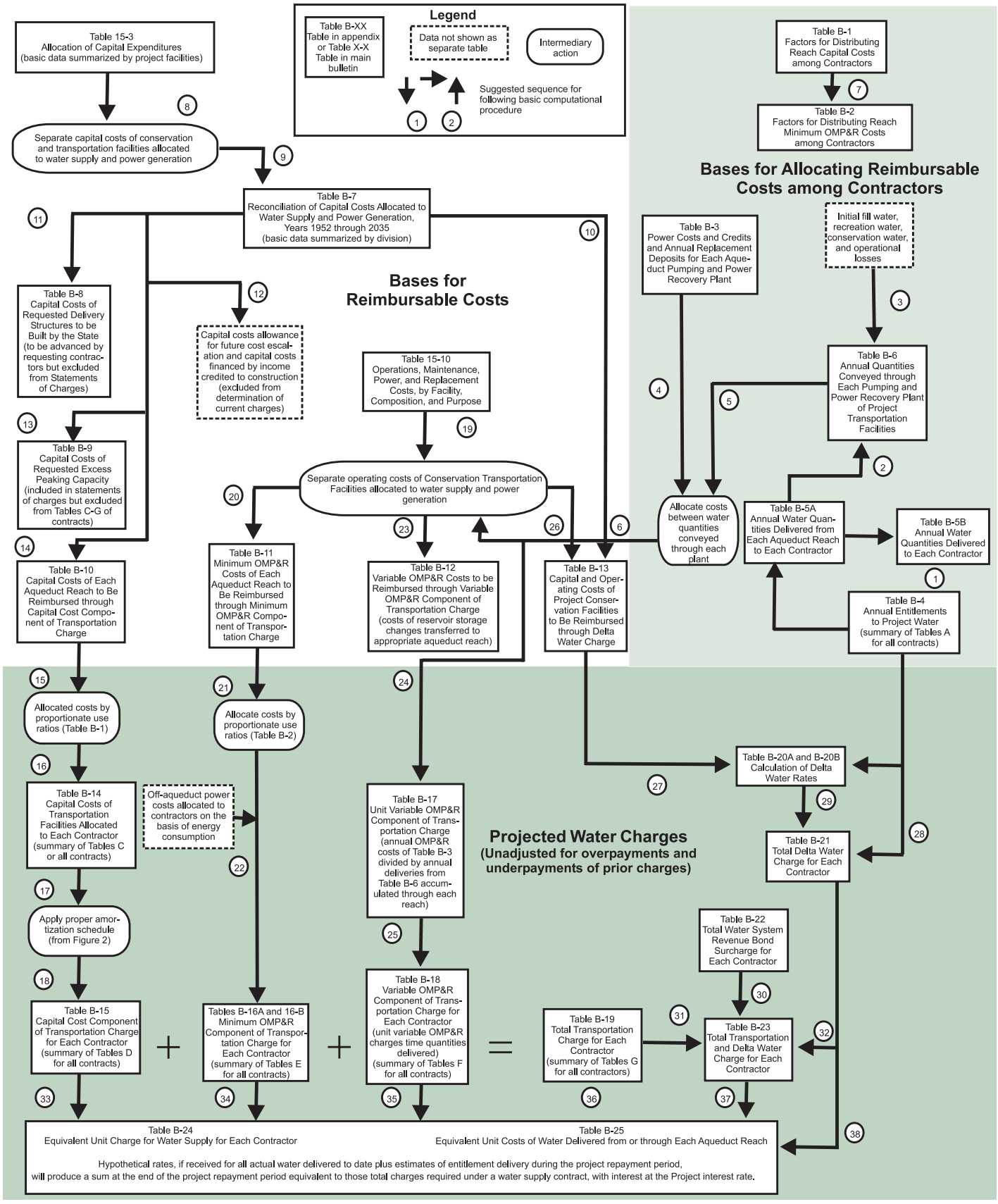
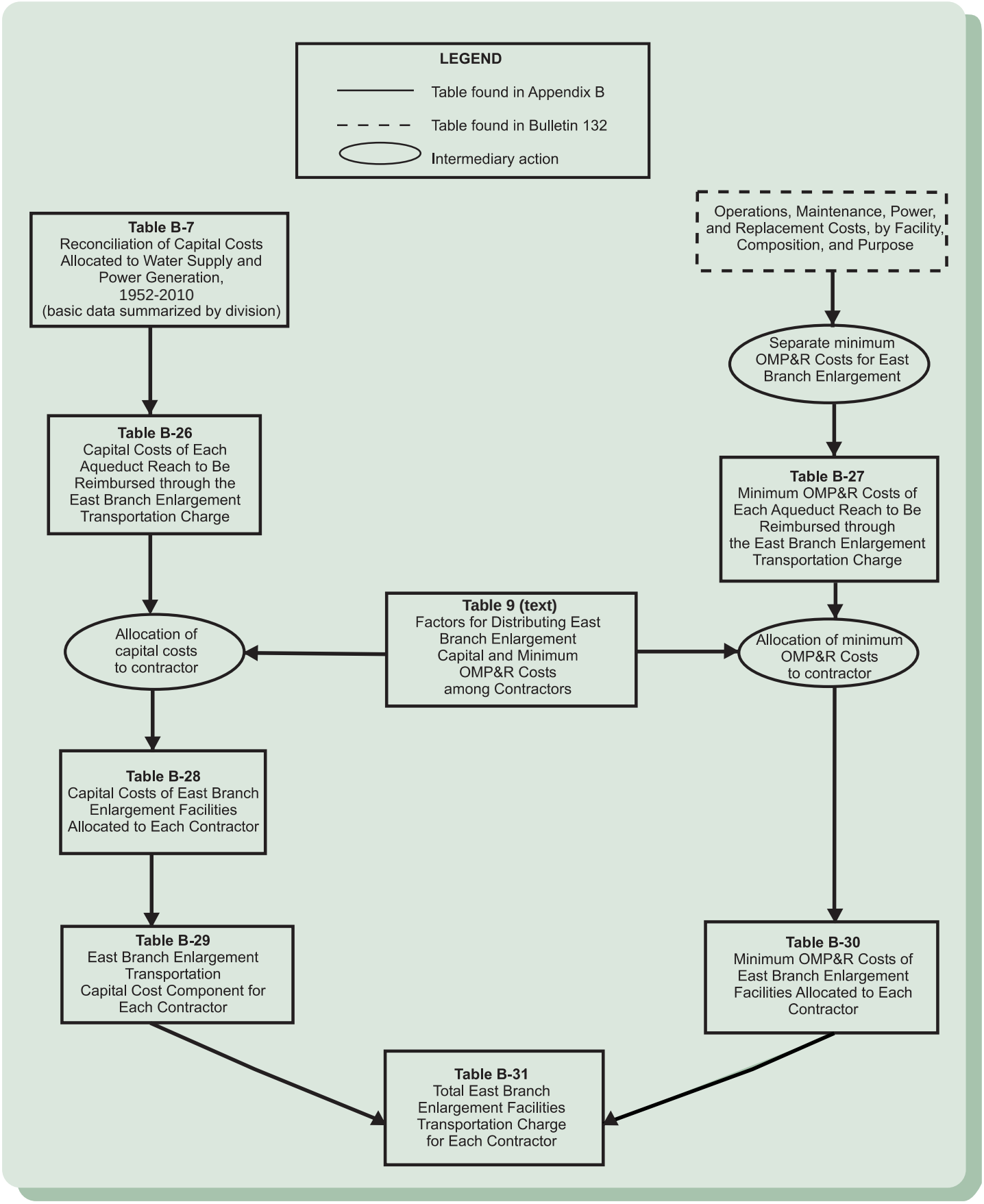


Figure B-2
Relationships of Data Used to Substantiate East Branch Enlargement Charges



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 2001.

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 2000 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 power plant reach and charged to aqueduct pumping plants
3. Hyatt-Thermalito Diversion Dam power plant generation charged to aqueduct pumping plants (credits for this generation are reflected in the Delta Water Rate)
4. Replacement deposits for equipment at pumping plants and power plants
5. Credits from sale of excess SWP system power
6. Program costs (portion) to offset annual fish losses resulting from pumping at 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

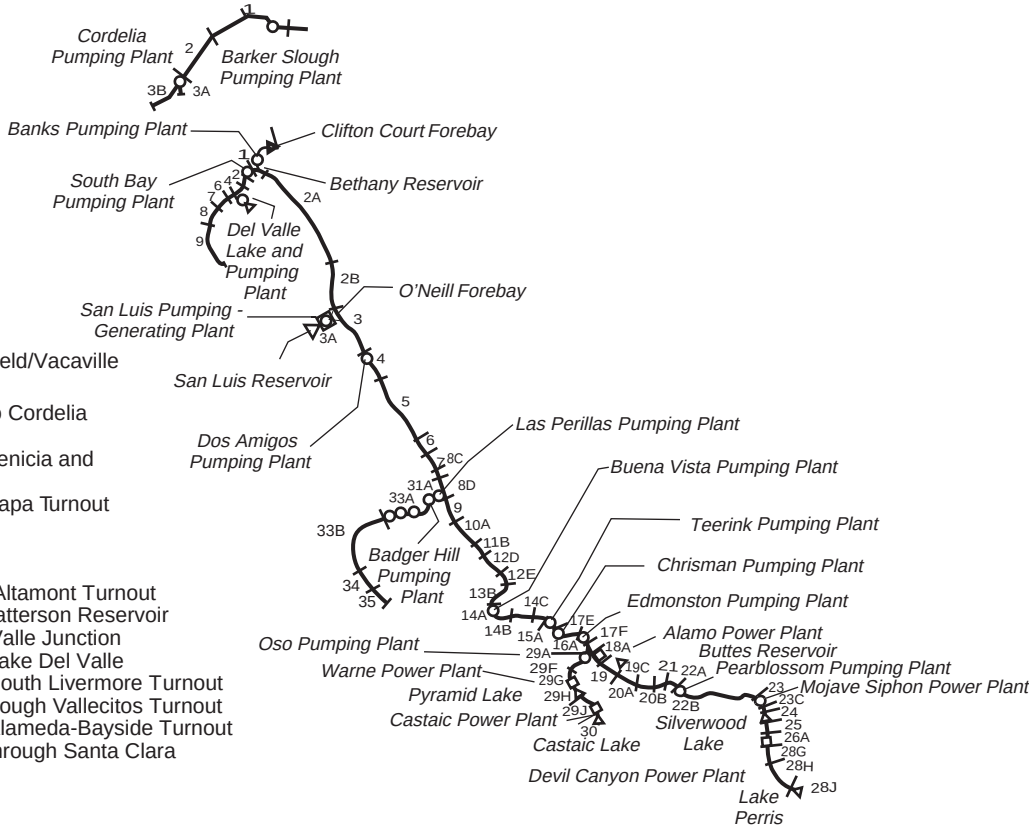
Figure B-4 includes information about the repayment reaches that form the basis for allocating reimbursable costs of the Project Transportation Facilities among contractors.

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 Power Plant
19 Alamo Power Plant 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 Power Plant
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 Power Plant
28G Devil Canyon Power Plant 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 Power Plant
29H Pyramid Dam and Lake
29J Pyramid Lake through Castaic Power Plant
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
33B Tank 1 through Chorro Valley Turnout
34 Chorro Valley Turnout through Lopez Turnout
35 Lopez Turnout through Guadalupe Turnout

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 2000 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 power plant for each of the following functions:

- *Deliveries-Water Supply.* Water made available to contractors at down-aqueduct delivery structures, including certain hypothetical quantities to facilitate cost allocations, for those years when deliveries are made from net annual storage withdrawals. The net annual amounts of storage withdrawals are hypothetically added to the actual amounts conveyed from the Delta to the reservoirs, since deliveries made from storage withdrawals 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, 1999; 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 Power Plant 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 Power Plants 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 power plants 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 2000, 2001, and 2002.

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 on-shore recreational developments.

2. That portion of variable plant costs attributable to the initial fill of aqueduct reaches is allocated to the joint capital costs of respective down-aqueduct reaches and reservoirs.

3. That portion of costs attributable to evaporation and seepage is allocated to the joint minimum OMP&R costs of 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. 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 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 contractors for project water service below Devil Canyon Power Plant and Castaic Power Plant 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 Power Plant and Castaic Power Plant 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 Power Plant and Castaic Power Plant 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 billed for any additional operating costs caused by

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.

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 1999.

Table 4
Summary of Off-Aqueduct Power Facility Charges and Credits

1999 Charges	
Reid Gardner Power Plant	$72,297,265
Bottle Rock Power Plant	$19,289,709
South Geysers Power Plant	$7,338,451
Subtotal	*$98,925,425*
1999 Credits	
Power sales	$14,484,887
Miscellaneous water (wheeling)	0
Subtotal	*$14,484,887*
Grand Total	**$84,440,538**

Table 5 shows projected charges for Off-Aqueduct Power Facilities and an amount equal to 25 percent of annual bond service for 2000 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 in water delivery schedules. An additional adjustment is made the following year based on actual water deliveries and actual costs for the year.

Table 5
Projected Charges for Off-Aqueduct Power Facilities

Year	Total Annual Cost	25% Bond Service
2000	94,328,037	9,507,543
2001	104,414,939	9,507,294
2002	102,060,471	9,511,981
2003	89,301,259	7,130,139
2004	89,294,765	7,138,840
2005	97,675,165	8,814,920
2006	97,728,764	8,825,639
2007	97,714,264	8,822,739
2008	116,508,342	12,581,555
2009	116,432,729	12,566,433
2010	116,362,088	12,558,305
2011	116,345,441	12,574,976
2012	116,644,708	12,634,829
2013	53,619,268	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

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

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 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 power plant for each year of the project repayment period. Those data are derived according to the following procedure specified in Article 26(a) of the Standard Provisions for calculating the variable OMP&R component of the Transportation Charge:

- An annual charge per acre-foot of projected water deliveries to all contractors served from or through each reach is determined so the projected variable OMP&R costs to be incurred for each reach will be returned to the State.
- The total annual variable OMP&R component for any contractor for a given reach is obtained by multiplying the unit charge associated with that reach by the quantity of water actually delivered 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 power plants 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 power plants. 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 Power Plant and Castaic Power Plant 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 2001 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 Power Plant 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 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

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
1999	0	0	0	0	63,196	26,235	0	3,394	4,136	8,959	31,350	7,740	0	145,010
Total	**3,257**	**3,858**	**5,246**	**38,439**	**1,039,078**	**637,067**	**71,946**	**78,642**	**43,362**	**67,448**	**171,883**	**20,439**	**132**	**2,180,797**

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
1999	0	0	0	0	0	0	0	76,425	0	0	6,922	0	0	0	0	0	11,576	50,087	145,010
Total	**4,537**	**7,823**	**34,550**	**13,644**	**3,523**	**55,188**	**5,957**	**1,615,740**	**4,114**	**2,017**	**102,185**	**123,044**	**11,742**	**24,983**	**41,156**	**2,156**	**74,697**	**53,741**	**2,180,797**

[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 Distri

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 Power Plant
19	Alamo Power Plant 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 Power Plant facilities)
23C	Mojave Siphon Power Plant 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 Power Plant
26B	Devil Canyon Power Plant 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

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 Table 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		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	0.29667896	0.70332104					1.00000000
2	Fairfield/Vacaville Turnout to Cordelia Forebay	0.38414552	0.61585448					1.00000000
3A	Cordelia Forebay thru Benicia and Vallejo Turnouts		1.00000000					1.00000000
3B	Cordelia Forebay thru Napa Turnout Reservoir	1.00000000						1.00000000
	South Bay Aqueduct							
1	Bethany Reservoir thru Altamont Turnout			0.22599612	0.20663021	0.49237700	0.07499667	1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.22599658	0.20663059	0.49237783	0.07499500	1.00000000
4	Patterson Reservoir to Del Valle Junction			0.19504795	0.21450017	0.51113249	0.07931939	1.00000000
5	Del Valle Junction thru Lake Del Valle			0.14436367	0.12972254	0.33715573	0.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.14599918	0.21144710	0.50574745	0.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				0.25176680	0.60218448	0.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.27934645	0.72065355		1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
	California Aqueduct							
1	Delta thru Bethany Reservoir			0.00954737	0.00872917	0.02080118	0.00342507	N/A

Reach No.	Reach Description	Central Coastal Area		Southern California Area				
		San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency
	California Aqueduct							
1	Delta thru Bethany Reservoir	0.00533010	0.00983337	0.02939084	0.01285827	0.00528315	0.00133612	0.00871300
2A	Bethany Reservoir to Orestimba Creek	0.00557213	0.01027988	0.03072531	0.01343201	0.00552068	0.00139620	0.00910474
2B	Orestimba Creek to O'Neill Forebay	0.00557824	0.01029119	0.03075915	0.01345351	0.00552831	0.00139814	0.00911733
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557719	0.01028923	0.03075332	0.01345294	0.00552772	0.00139798	0.00911637
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557607	0.01028717	0.03074719	0.01345233	0.00552710	0.00139784	0.00911536
5	Panoche Creek to Five Points	0.00557467	0.01028462	0.03073954	0.01345157	0.00552633	0.00139763	0.00911409
6	Five Points to Arroyo Pasajero	0.00557257	0.01028074	0.03072799	0.01345042	0.00552517	0.00139733	0.00911216
7	Arroyo Pasajero to Kettleman City	0.00557189	0.01027949	0.03072428	0.01345006	0.00552480	0.00139723	0.00911154
8C	Kettleman City thru Milham Avenue	0.00557103	0.01027792	0.03071961	0.01344960	0.00552432	0.00139712	0.00911076
8D	Milham Avenue thru Avenal Gap	0.00568611	0.01049020	0.03135418	0.01373353	0.00563986	0.00142632	0.00930130
9	Avenal Gap thru Twisselman Road			0.03426625	0.01356094	0.00616886	0.00156011	0.01017373
10A	Twisselman Road thru Lost Hills			0.03481391	0.01377767	0.00626946	0.00158556	0.01033963
11B	Lost Hills to 7th Standard Road			0.03835043	0.01517717	0.00691699	0.00174933	0.01140749
12D	7th Standard Road thru Elk Hills Road			0.04031661	0.01595523	0.00727790	0.00184059	0.01200265
12E	Elk Hills Road thru Tupman Road			0.04037074	0.01597665	0.00728878	0.00184332	0.01202059
13B	Tupman Road to Buena Vista Pumping Plant			0.04379882	0.01733322	0.00791595	0.00200194	0.01305492
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04599268	0.01820137	0.00831952	0.00210399	0.01372049
14B	Santiago Creek thru Old River Road			0.04682530	0.01853084	0.00847388	0.00214303	0.01397505
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04825217	0.01909545	0.00873768	0.00220973	0.01441013
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04905609	0.01941356	0.00888679	0.00224744	0.01465600
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.05089794	0.02014241	0.00922722	0.00233351	0.01521742
17E	Edmonston Pumping Plant to Porter Tunnel			0.05329388	0.02109050	0.00967107	0.00244575	0.01594937
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05340725	0.02113537	0.00969176	0.00245098	0.01598349
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13238112		0.02399391	0.00606795	0.03957043
19	Alamo Power Plant 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 Power Plant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch, Calif. Aqueduct thru Oso Pumping P.				0.03544337			
29F	Oso Pumping Plant thru Quail Embankment				0.03544339			
29G	Quail Embankment thru Warne Power Plant				0.03544339			
29H	Pyramid Dam and Lake				0.02817144			
29J	Pyramid Lake thru Castaic Power Plant				0.03544338			
30	Castaic Dam and Lake				0.02927284			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560301	0.19482503		0.07364766			
33A	Devil's Den Pumping Plant thru Tank 1	0.10101221	0.89898779					
33B	Tank 1 through Chorro Valley Turnout	0.09912818	0.90087182					
34	Chorro Valley Turnout through Lopez Turnout	0.05479573	0.94520427					
35	Lopez Turnout through Guadalupe Turnout	0.00000000	1.00000000					

Note: Proportionate use factors **do not** reflect Permanent water transfer as a result of the Monterey Amendment.

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	0.01707770	0.00088678	0.00254693	0.02741768	0.30629913	0.00090695	0.00167121	0.03504975
2A	0.01781031	0.00092482	0.00266258	0.02864263	0.31945188	0.00094747	0.00174288	0.03655331
2B	0.01785838	0.00092731	0.00266550	0.02868743	0.32030556	0.00094896		0.03665201
3	0.01786337	0.00092757	0.00266499	0.02868589	0.32039254	0.00094892		0.03666225
4	0.01786863	0.00092785	0.00266446	0.02868428	0.32048398	0.00094886		0.03667303
5	0.01787517	0.00092819	0.00266380	0.02868227	0.32059816	0.00094879		0.03668649
6	0.01788508	0.00092870	0.00266279	0.02867923	0.32077093	0.00094868		0.03670685
7	0.01788826	0.00092887	0.00266246	0.02867825	0.32082633	0.00094864		0.03671338
8C	0.01789228	0.00092909	0.00266205	0.02867702	0.32089625	0.00094859		0.03672162
8D	0.01828779		0.00271703	0.02928147	0.32798200			0.01820857
9				0.03204523	0.32739538			
10A				0.03257442	0.31658608			
11B				0.03597398	0.24684668			
12D				0.03787171	0.20804762			
12E				0.03793198	0.20695175			
13B				0.01458796	0.16600071			
14A				0.00620338	0.13319181			
14B				0.00632023	0.11741558			
14C				0.00651962	0.09039633			
15A				0.00663252	0.07516317			
16A				0.00688973	0.04028829			
17E				0.00212516				
31A			0.05046240		0.57546190			

Reach No.	Southern California Area (Continued)								Total
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino 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	0.00049180	0.01101147	0.00369131	0.02362857	0.00650354	0.00398392	0.43929350	0.00429212	1.00000000
2A	0.00051413	0.01151136	0.00385891	0.02469101	0.00679699	0.00416304	0.45921072	0.00448701	1.00000000
2B	0.00051469	0.01152409	0.00386317	0.02472511	0.00680570	0.00416880	0.45973548	0.00449194	1.00000000
3	0.00051461	0.01152193	0.00386244	0.02472246	0.00680478	0.00416835	0.45965407	0.00449108	1.00000000
4	0.00051451	0.01151965	0.00386167	0.02471968	0.00680380	0.00416787	0.45956848	0.00449019	1.00000000
5	0.00051440	0.01151681	0.00386070	0.02471620	0.00680259	0.00416730	0.45946161	0.00448907	1.00000000
6	0.00051419	0.01151251	0.00385926	0.02471095	0.00680076	0.00416640	0.45929991	0.00448738	1.00000000
7	0.00051413	0.01151113	0.00385879	0.02470927	0.00680016	0.00416612	0.45924807	0.00448685	1.00000000
8C	0.00051405	0.01150938	0.00385821	0.02470716	0.00679941	0.00416576	0.45918261	0.00448616	1.00000000
8D	0.00052466	0.01174718	0.00393793	0.02522383	0.00694100	0.00425288	0.46868533	0.00457883	1.00000000
9	0.00057339	0.01283841	0.00430367	0.02758959	0.00758975	0.00465175	0.51227887	0.00500407	1.00000000
10A	0.00058254	0.01304366	0.00437246	0.02803943	0.00771262	0.00472760	0.52049091	0.00508405	1.00000000
11B	0.00064171	0.01436906	0.00481665	0.03093503	0.00850448	0.00521581	0.57349473	0.00560046	1.00000000
12D	0.00067463	0.01510596	0.00506361	0.03254889	0.00894541	0.00548790	0.60297374	0.00588755	1.00000000
12E	0.00067553	0.01512626	0.00507040	0.03259749	0.00895830	0.00549608	0.60379667	0.00589546	1.00000000
13B	0.00073290	0.01641098	0.00550099	0.03540212	0.00972547	0.00596896	0.65516902	0.00639604	1.00000000
14A	0.00076961	0.01723325	0.00577656	0.03720681	0.01021819	0.00627322	0.68807273	0.00671639	1.00000000
14B	0.00078354	0.01754538	0.00588113	0.03789703	0.01040613	0.00638960	0.70057530	0.00683798	1.00000000
14C	0.00080743	0.01808019	0.00606036	0.03907670	0.01072763	0.00658850	0.72199174	0.00704634	1.00000000
15A	0.00082089	0.01838154	0.00616135	0.03974336	0.01090913	0.00670088	0.73406357	0.00716371	1.00000000
16A	0.00085171	0.01907194	0.00639271	0.04126559	0.01132404	0.00695754	0.76170731	0.00743264	1.00000000
17E	0.00089182	0.01997003	0.00669365	0.04325018	0.01186455	0.00729213	0.79767940	0.00778251	1.00000000
17F	0.00089372	0.02001251	0.00670788	0.04334270	0.01188988	0.00730773	0.79937767	0.00779906	1.00000000
18A	0.00221525	0.04960424	0.01662680	0.10730448	0.02944860	0.01809192	0.57469530		1.00000000
19	0.00221522	0.04960300	0.01662640	0.10730707	0.02944876	0.01809230	0.57469556		1.00000000
19C									1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161798	0.01942666	0.61700971		1.00000000
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316986	0.02038045	0.64729087		1.00000000
21	0.00254199	0.05692053		0.12319480	0.03380324	0.02077093	0.65963498		1.00000000
22A		0.05773082		0.12495766	0.03428605	0.02106816	0.66905054		1.00000000
22B		0.05842136		0.12645207	0.03469614	0.02132008	0.67705256		1.00000000
23				0.14467451	0.03969010	0.02439237	0.77446614		1.00000000
24				0.22243002	0.04339444	0.02843498	0.66607404		1.00000000
25				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
26A				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
28G				0.05126137			0.94873863		1.00000000
28H							1.00000000		1.00000000
28J							1.00000000		1.00000000
29A							0.95147783	0.01307880	1.00000000
29F							0.95147785	0.01307876	1.00000000
29G							0.95147785	0.01307876	1.00000000
29H							0.96278381	0.00904475	1.00000000
29J							0.95147787	0.01307875	1.00000000
30							0.96212388	0.00860328	1.00000000
31A									1.00000000
33A									1.00000000
34									1.00000000
35									1.00000000

Table B-2

Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

Reach No.	Reach Description	North Bay Area		South Bay Area				Total
		Napa County FC&WCD	Solano County 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			0.30099280	0.20663022	0.49237698	0.00000000	1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.30099158	0.20663060	0.49237782	0.00000000	1.00000000
4	Patterson Reservoir to Del Valle Junction			0.27436733	0.21450018	0.51113249	0.00000000	1.00000000
5	Del Valle Junction thru Lake Del Valle			0.53312173	0.12972254	0.33715573	0.00000000	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.28280545	0.21144710	0.50574745	0.00000000	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout			0.14604872	0.25176680	0.60218448	0.00000000	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			See Sheet 2 of 2	0.00873558	0.02081645	0.00000000	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	0.00533400	0.00984057	0.02940636	0.02552436	0.00528627	0.00133691	0.00871816
2A	Bethany Reservoir to Orestimba Creek	0.00557631	0.01028762	0.03074218	0.02664168	0.00552406	0.00139706	0.00911035
2B	Orestimba Creek to O'Neill Forebay	0.00558246	0.01029899	0.03077618	0.02669936	0.00553173	0.00139900	0.00912300
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00558140	0.01029703	0.03077038	0.02670263	0.00553116	0.00139884	0.00912205
4	Dos Amigos Pumping Plant to Panoche Creek	0.00558029	0.01029498	0.03076428	0.02670607	0.00553055	0.00139870	0.00912104
5	Panoche Creek to Five Points	0.00557889	0.01029244	0.03075667	0.02671036	0.00552978	0.00139850	0.00911978
6	Five Points to Arroyo Pasajero	0.00557681	0.01028857	0.03074515	0.02671685	0.00552863	0.00139819	0.00911786
7	Arroyo Pasajero to Kettleman City	0.00557613	0.01028733	0.03074146	0.02671894	0.00552826	0.00139809	0.00911725
8C	Kettleman City thru Milham Avenue	0.00552001	0.01018381	0.03043201	0.02638664	0.00546910	0.00138314	0.00901969
8D	Milham Avenue thru Avenal Gap	0.00563249	0.01039130	0.03105211	0.02694796	0.00558185	0.00141165	0.00920564
9	Avenal Gap thru Twisselman Road			0.03378612	0.02798192	0.00607852	0.00153726	0.01002476
10A	Twisselman Road thru Lost Hills			0.03431545	0.02844595	0.00617563	0.00156181	0.01018488
11B	Lost Hills to 7th Standard Road			0.03756540	0.03126175	0.00676937	0.00171196	0.01116406
12D	7th Standard Road thru Elk Hills Road			0.03939027	0.03285855	0.00710391	0.00179656	0.01171576
12E	Elk Hills Road thru Tupman Road			0.03944038	0.03291451	0.00711396	0.00179912	0.01173237
13B	Tupman Road to Buena Vista Pumping Plant			0.04268432	0.03572032	0.00770627	0.00194889	0.01270915
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04474621	0.03733316	0.00808475	0.00204460	0.01333331
14B	Santiago Creek thru Old River Road			0.04538655	0.03356461	0.00820524	0.00207506	0.01353200
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04655171	0.03234313	0.00842141	0.00212973	0.01388846
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04723444	0.03281744	0.00854788	0.00216172	0.01409703
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.04881440	0.03391509	0.00883917	0.00223540	0.01457742
17E	Edmonston Pumping Plant to Porter Tunnel			0.05078156	0.03528173	0.00920240	0.00232724	0.01517649
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05088413	0.03535299	0.00922107	0.00233196	0.01520727
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13238112		0.02399391	0.00606795	0.03957043
19	Alamo Power Plant 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 Power Plant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch, Calif. Aqueduct thru Oso Pumping. P.			0.00296720	0.05726734			
29F	Oso Pumping Plant thru Quail Embankment			0.00296796	0.05726649			
29G	Quail Embankment thru Warne Power Plant				0.05742327			
29H	Pyramid Dam and Lake				0.03349572			
29J	Pyramid Lake thru Castaic Power Plant				0.05740996			
30	Castaic Dam and Lake				0.03248607			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560302	0.19482546		0.07364766			
33A	Devil's Den Pumping Plant thru Tank 1	0.10101221	0.89898779					
33B	Tank 1 through Chorro Valley Turnout	0.10101221	0.89898779					
34	Chorro Valley Turnout through Lopez Turnout	0.05271277	0.94728723					
35	Lopez Turnout through Guadalupe Turnout		1.00000000					

Note: Proportionate use factors reflect Permanent water transfer as a result of the Monterey Amendment.

Table B-2

Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

Reach No.	South Bay Area	San Joaquin Valley Area							
					Kern County Water Agency				
	Alameda County FC&WCD--Zone 7	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Municipal and Industrial	Agricultural	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
	California Aqueduct								
1	0.01841167	0.01709502	0.00088768	0.00254879	0.02743788	0.27981169	0.00090769	0.00167293	0.03508532
2A	0.00567066	0.01782895	0.00092579	0.00266458	0.02866441	0.29183313	0.00094827	0.00174471	0.03659156
2B	0.00568164	0.01787721	0.00092829	0.00266751	0.02870942	0.29261731	0.00094976		0.03669064
3	0.00568195	0.01788223	0.00092855	0.00266700	0.02870793	0.29269784	0.00094972		0.03670096
4	0.00568229	0.01788752	0.00092883	0.00266646	0.02870635	0.29278252	0.00094966		0.03671181
5	0.00568271	0.01789411	0.00092917	0.00266579	0.02870438	0.29288828	0.00094959		0.03672537
6	0.00568333	0.01790409	0.00092969	0.00266479	0.02870141	0.29304828	0.00094948		0.03674587
7	0.00568353	0.01790729	0.00092986	0.00266448	0.02870045	0.29309958	0.00094945		0.03675244
8C	0.00561572	0.01766299	0.00091718	0.00263768	0.02838168	0.28911359	0.00093889		0.03625096
8D	0.00573411	0.01804681		0.00269142	0.02897114	0.29539131			0.01796863
9	0.00470450				0.03156637	0.29783270			
10A	0.00478149				0.03207681	0.28667374			
11B					0.03519011	0.22361658			
12D					0.03694796	0.18551438			
12E					0.03700374	0.18439311			
13B					0.01419288	0.14263255			
14A					0.00602393	0.10980819			
14B					0.00611593	0.10107743			
14C					0.00627964	0.07974408			
15A					0.00637535	0.06606495			
16A					0.00659511	0.03449417			
17E					0.00202042				
31A	0.02622386			0.05046240		0.45605270			

Reach No.	Southern California Area (continued)								Total
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water Agency	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	0.00049207	0.01824051	0.00459968	0.02364249	0.00650722	0.00398628	0.43938211	0.00429231	1.00000000
2A	0.00051443	0.01905302	0.00480811	0.02470612	0.00680099	0.00416560	0.45931311	0.00448730	1.00000000
2B	0.00051499	0.01908487	0.00481378	0.02474036	0.00680973	0.00417138	0.45984013	0.00449226	1.00000000
3	0.00051491	0.01908444	0.00481297	0.02473773	0.00680882	0.00417094	0.45975910	0.00449142	1.00000000
4	0.00051481	0.01908400	0.00481212	0.02473497	0.00680784	0.00417046	0.45967392	0.00449053	1.00000000
5	0.00051467	0.01908343	0.00481106	0.02473153	0.00680663	0.00416989	0.45956754	0.00448943	1.00000000
6	0.00051447	0.01908257	0.00480947	0.02472633	0.00680481	0.00416902	0.45940659	0.00448774	1.00000000
7	0.00051440	0.01908231	0.00480895	0.02472467	0.00680421	0.00416874	0.45935497	0.00448721	1.00000000
8C	0.00050923	0.01886603	0.00475974	0.02446020	0.00673296	0.00412415	0.46619254	0.00444206	1.00000000
8D	0.00051960	0.01925949	0.00485703	0.02496443	0.00687119	0.00420915	0.47576012	0.00453257	1.00000000
9	0.00056534	0.01853492	0.00528586	0.02718562	0.00748029	0.00458365	0.51792055	0.00493162	1.00000000
10A	0.00057421	0.01882435	0.00536909	0.02761983	0.00759896	0.00465685	0.52613207	0.00500888	1.00000000
11B	0.00062860	0.02060256	0.00587959	0.03027497	0.00832559	0.00510450	0.57642175	0.00548321	1.00000000
12D	0.00065915	0.02160045	0.00608203	0.03177092	0.00873450	0.00535672	0.60471929	0.00574955	1.00000000
12E	0.00065997	0.02162738	0.00608979	0.03181591	0.00874644	0.00536431	0.60554215	0.00575686	1.00000000
13B	0.00071426	0.02340249	0.00659077	0.03446459	0.00947146	0.00581087	0.65572085	0.00623033	1.00000000
14A	0.00074877	0.02452971	0.00690923	0.03615705	0.00993389	0.00609622	0.68771972	0.00653126	1.00000000
14B	0.00075950	0.02487823	0.00700816	0.03669570	0.01007982	0.00618702	0.69781003	0.00662472	1.00000000
14C	0.00077900	0.02551403	0.00718816	0.03766219	0.01034291	0.00634999	0.71601079	0.00679477	1.00000000
15A	0.00079041	0.02588667	0.00729362	0.03822772	0.01049694	0.00644533	0.72666609	0.00689441	1.00000000
16A	0.00081684	0.02674976	0.00753768	0.03953029	0.01085229	0.00666495	0.75125241	0.00712502	1.00000000
17E	0.00084977	0.02782408	0.00784155	0.04115462	0.01129518	0.00693883	0.78189401	0.00741212	1.00000000
17F	0.00085149	0.02788024	0.00785739	0.04123809	0.01131805	0.00695290	0.78347733	0.00742709	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
31A		0.09318490							1.00000000
33A									1.00000000
33B									1.00000000
34									1.00000000
35									1.00000000

Table B-3

Power Costs and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant

(Dollars)

Calendar Year	North Bay Aqueduct			South Bay Aqueduct	California Aqueduct					
	Reach 1	Reach 3A	Reach 3B	Reach 1 (b	Reach 1	Reach 4	Reach 14A	Reach 15A	Reach 16A	Reach 17E
	Barker Slough Pumping 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	37,731	0	0	0	0	0	0
1963	0	0	0	56,414	0	0	0	0	0	0
1964	0	0	0	71,745	0	0	0	0	0	0
1965	0	0	0	138,653	0	0	0	0	0	0
1966	0	0	0	189,402	0	0	0	0	0	0
1967	0	0	0	220,327	28,554	0	0	0	0	0
1968	0	0	7,128	339,261	1,286,777	227,505	0	0	0	0
1969	0	0	8,557	274,851	817,304	119,303	0	0	0	0
1970	0	0	13,666	439,983	330,508	193,720	2,940	0	0	0
1971	0	0	10,626	413,657	559,946	205,206	134,340	7,921	0	0
1972	0	0	14,430	615,164	1,072,833	541,628	305,868	159,125	348,235	1,179,787
1973	0	0	14,453	477,134	880,234	469,676	469,104	472,187	829,325	2,961,697
1974	0	0	17,508	502,473	959,269	536,361	514,168	553,285	993,796	3,522,973
1975	0	0	14,801	373,706	1,315,916	536,495	607,981	664,738	1,340,518	4,675,938
1976	0	0	20,867	580,607	878,728	572,326	658,261	645,377	1,360,502	4,740,176
1977	0	0	22,640	534,087	631,578	178,904	139,856	138,714	291,196	977,258
1978	0	0	21,670	559,981	3,833,011	653,606	966,756	926,444	1,728,268	6,104,186
1979	0	0	16,240	614,117	3,394,344	994,921	805,839	788,539	1,612,105	5,564,009
1980	0	0	19,936	523,445	1,981,918	818,368	857,033	846,757	1,808,192	6,269,482
1981	0	0	23,863	639,976	1,975,220	1,640,814	1,197,553	1,189,437	2,731,775	9,388,367
1982	0	0	12,078	484,808	3,405,761	1,148,258	1,159,605	1,212,973	2,557,070	9,355,533
1983	0	0	2,339	77,394	1,264,426	140,742	276,289	264,076	545,887	1,827,188
1984	0	0	4,797	289,827	1,390,432	555,409	551,468	508,111	1,044,264	3,507,659
1985	0	0	10,220	456,051	2,830,593	1,283,981	1,336,378	1,378,587	2,994,227	10,459,919
1986	0	0	15,484	827,079	7,180,656	2,282,364	2,290,023	2,343,903	5,062,706	17,643,403
1987	0	0	27,223	901,077	3,924,603	1,996,638	1,851,663	1,885,638	4,119,308	14,361,151
1988	18,112	19,927	23,868	932,456	5,377,272	2,072,091	2,100,427	2,142,121	4,724,696	16,562,202
1989	30,783	45,783	26,501	1,211,118	10,887,880	3,334,006	3,427,675	3,553,496	7,936,397	27,756,045
1990	53,484	67,109	40,793	1,881,178	9,523,541	4,754,649	5,990,489	6,327,687	14,254,357	50,152,078
1991	11,254	10,442	5,983	365,808	3,463,154	723,518	1,263,736	1,445,729	3,363,863	12,019,190
1992	14,484	13,070	9,398	327,309	2,700,240	808,067	1,071,702	1,121,273	2,503,167	8,677,102
1993	(12,340)	(8,753)	(5,393)	(159,836)	(333,548)	(609,139)	(461,719)	(459,965)	(1,018,142)	(3,558,718)
1994	54,154	39,894	29,105	823,063	4,439,609	1,940,345	2,322,098	2,371,362	5,328,412	18,692,998
1995	20,699	20,620	11,791	253,482	4,009,296	1,076,372	924,147	887,105	1,948,905	6,847,537
1996	59,545	47,288	23,483	645,189	9,531,541	3,449,781	2,444,752	2,341,848	5,156,434	18,332,558
1997	69,837	52,935	21,955	963,877	7,625,930	3,064,281	2,847,907	2,788,387	6,217,434	22,057,503
1998	(11,058)	(9,488)	(4,554)	(124,695)	296,016	(362,362)	(316,705)	(304,065)	(673,122)	(2,350,976)
1999	34,575	25,334	9,106	571,385	5,987,182	1,893,374	1,704,568	1,635,143	4,433,501	14,385,029
2000	207,648	98,890	160,575	2,218,831	18,665,395	7,109,185	8,006,048	9,189,462	19,496,847	68,727,280
2001	181,523	105,351	139,786	2,371,561	18,987,449	7,230,093	8,398,952	9,697,658	20,606,563	72,664,585
2002	213,623	121,944	165,311	2,685,489	21,013,772	8,368,922	9,721,889	11,221,651	23,847,088	84,075,077
2003	167,733	159,621	172,992	2,502,344	19,291,461	7,732,584	8,707,163	8,462,702	19,881,967	74,380,703
2004	150,762	144,849	156,225	2,229,504	17,023,498	6,751,687	7,738,225	7,523,560	17,677,928	66,140,195
2005	175,636	167,663	182,925	2,682,406	18,583,265	8,084,561	9,504,975	9,278,884	21,834,799	81,767,259
2006	181,182	171,588	190,793	2,775,909	19,911,937	8,399,781	9,992,765	9,769,488	23,001,719	86,165,427
2007	179,083	168,331	190,654	2,723,515	19,119,094	8,380,005	10,093,262	9,883,049	23,282,255	87,246,709
2008	161,227	150,395	173,571	2,433,642	19,543,232	7,502,790	9,058,883	8,872,445	20,903,143	78,335,516
2009	169,102	156,492	183,877	2,532,611	17,539,125	7,849,883	9,514,953	9,323,573	21,970,078	82,342,798
2010	179,270	164,628	196,974	2,663,987	22,243,218	8,339,985	10,156,675	9,959,897	23,475,773	88,000,672
2011	180,721	164,697	200,628	2,665,099	20,448,504	8,463,779	10,370,539	10,180,053	24,003,769	90,000,530
2012	189,092	171,023	212,077	2,767,469	19,160,112	8,729,813	10,666,310	10,465,479	24,672,350	92,497,438
2013	210,942	189,592	238,498	3,067,944	25,192,847	9,843,656	12,113,040	11,899,155	28,064,593	105,242,974
2014	230,079	205,031	263,102	3,317,792	22,613,597	10,755,185	13,291,278	13,065,788	30,823,989	115,608,963
2015	237,239	208,419	277,111	3,372,602	25,432,386	10,974,183	13,581,283	13,354,265	31,507,511	118,179,197
2016	242,919	210,756	289,318	3,410,427	28,903,906	11,212,977	13,935,992	13,712,614	32,361,079	121,399,351
2017	242,044	207,419	293,733	3,356,424	26,072,772	11,065,487	13,768,207	13,549,996	31,979,372	119,972,301
2018	252,753	214,005	312,981	3,463,000	25,117,767	11,291,389	13,986,423	13,754,577	32,453,605	121,731,618
2019	262,696	219,795	331,814	3,556,694	29,961,458	12,066,785	15,183,386	14,970,325	35,354,978	132,689,851
2020	249,849	206,639	321,408	3,343,794	26,308,918	11,214,270	14,048,251	13,840,996	32,679,346	122,628,306
2021	249,973	206,266	322,388	3,337,766	25,877,110	11,243,404	14,108,289	13,904,055	32,831,523	123,206,905
2022	241,074	198,923	310,911	3,218,941	23,851,350	10,848,837	13,616,759	13,420,072	31,689,097	118,920,704
2023	242,656	200,228	312,950	3,240,055	25,738,841	10,927,904	13,719,319	13,521,740	31,929,736	119,824,931
2024	230,079	205,031	263,102	3,317,792	22,835,705	10,755,185	13,291,278	13,065,788	30,823,989	115,608,963
2025	251,660	207,657	324,563	3,360,288	23,626,601	11,292,519	14,156,903	13,949,824	32,937,808	123,601,778
2026	253,650	209,300	327,130	3,386,859	29,729,200	11,466,932	14,416,411	14,212,170	33,562,910	125,960,643
2027	249,243	205,663	321,446	3,328,010	26,333,863	11,231,798	14,104,125	13,901,653	32,827,219	123,194,022
2028	251,241	207,311	324,022	3,354,687	27,024,769	11,309,231	14,195,672	13,990,856	33,037,130	123,979,838
2029	247,551	204,267	319,264	3,305,424	25,662,038	11,149,456	13,997,778	13,796,254	32,578,017	122,257,894
2030	249,858	206,171	322,239	3,336,222	26,969,470	11,253,055	14,128,224	13,924,843	32,881,605	123,397,163
2031	245,913	202,916	317,151	3,283,547	23,616,934	10,822,324	13,463,555	13,249,900	31,270,876	117,313,694
2032	251,581	207,592	324,462	3,359,236	27,017,299	11,454,941	14,441,865	14,243,730	33,642,936	126,273,073
2033	266,175	219,635	343,283	3,554,101	27,323,589	11,803,063	14,727,887	14,501,370	34,230,563	128,431,170
2034	254,980	210,397	328,845	3,404,618	26,753,809	11,608,750	14,635,733	14,434,922	34,094,401	127,967,513
2035	248,985	205,450	321,113	3,324,567	25,907,441	11,252,246	14,144,942	13,944,377	32,930,196	123,585,302
Total	8,343,271	7,028,096	9,927,784	128,582,441	952,852,456	397,027,853	480,431,441	477,873,104	1,114,690,034	4,145,431,617

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)									Grand Total (20)
	Reach 18A	Reach 22B	Reach 23	Reach 26A	Reach 29A	Reach 29G	Reach 29J	Reach 31A	Reach 33A	
	Alamo Power Plant (11)	Pearblossom Pumping Plant (12)	Mojave Siphon Power Plant (13)	Devil Canyon Power Plant (14)	Oso Pumping Plant (15)	Warne Power Plant (16)	Castaic Power Plant (17)	Las Perillas and Badger Hill Pumping Plants (18)	Devil's Den, Bluestone, and Polonio Pass Pumping Plants (19)	
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	37,731
1963	0	0	0	0	0	0	0	0	0	56,414
1964	0	0	0	0	0	0	0	0	0	71,745
1965	0	0	0	0	0	0	0	0	0	138,653
1966	0	0	0	0	0	0	0	0	0	189,402
1967	0	0	0	0	0	0	0	0	0	248,881
1968	0	0	0	0	0	0	0	118,578	0	1,979,249
1969	0	0	0	0	0	0	0	76,920	0	1,296,935
1970	0	0	0	0	0	0	0	134,749	0	1,115,566
1971	0	0	0	0	0	0	0	168,689	0	1,500,385
1972	0	81,484	0	(3,112)	157,005	0	(385,696)	213,251	0	4,300,002
1973	0	586,209	0	(956,197)	238,650	0	(1,193,216)	120,014	0	5,369,270
1974	0	566,546	0	(963,572)	286,640	0	(1,823,397)	119,505	0	5,785,555
1975	0	587,227	0	(1,125,945)	421,687	0	(2,835,302)	92,012	0	6,669,772
1976	0	871,540	0	(1,567,312)	278,869	0	(2,512,021)	146,530	0	6,674,450
1977	0	275,980	0	(1,262,960)	17,319	0	(1,701,284)	84,225	0	327,513
1978	0	1,758,473	0	(3,345,147)	215,573	0	(2,361,377)	190,745	0	11,252,189
1979	0	1,770,844	0	(3,381,969)	122,134	0	(2,752,003)	203,143	0	9,752,263
1980	0	1,769,468	0	(3,508,195)	86,893	0	(2,728,494)	182,996	0	8,927,799
1981	0	2,049,947	0	(3,743,153)	382,330	0	(2,854,192)	189,573	0	14,811,510
1982	0	1,614,895	0	(3,149,352)	444,009	(973,898)	(3,476,126)	182,427	0	13,978,041
1983	0	301,180	0	(5,905,161)	59,561	(1,314,237)	(3,904,690)	18,936	0	(6,346,070)
1984	0	633,223	0	(7,865,341)	135,658	(2,285,362)	844,120	117,585	0	(568,150)
1985	0	1,140,057	0	(10,664,136)	739,708	(8,476,552)	(19,162,735)	155,931	0	(15,517,771)
1986	(1,080,970)	2,482,042	0	(12,235,312)	1,037,512	(6,269,528)	(11,462,662)	317,622	0	10,434,322
1987	(1,062,392)	1,822,523	0	(10,871,342)	914,642	(6,757,040)	(11,630,562)	266,825	0	1,749,955
1988	(810,907)	2,373,442	0	(14,772,519)	951,580	(7,448,747)	(12,677,211)	237,272	0	1,826,082
1989	(822,973)	4,130,250	0	(19,098,882)	1,543,985	(8,790,866)	(14,657,167)	309,851	0	20,823,882
1990	(845,641)	6,810,694	0	(21,336,948)	3,032,334	(11,692,826)	(19,863,014)	466,262	0	49,616,226
1991	(351,262)	1,306,263	0	(5,781,948)	778,874	(5,250,121)	(8,731,129)	17,608	0	4,660,962
1992	(997,736)	1,116,809	0	(9,903,370)	541,093	(5,955,563)	(9,599,392)	111,742	0	(7,440,605)
1993	(84,856)	(370,935)	0	(7,956,659)	(244,261)	(4,607,075)	(9,740,511)	(122,190)	0	(29,754,040)
1994	(93,031)	2,528,937	0	(12,122,861)	1,035,776	(6,228,273)	(10,867,596)	226,550	0	10,520,542
1995	(1,297,179)	951,513	0	(10,256,635)	342,312	(3,827,718)	(7,403,219)	261,423	0	(5,229,549)
1996	(2,959,744)	2,725,712	(941,959)	(13,155,960)	908,180	(5,026,221)	(8,969,945)	321,137	0	14,933,619
1997	(2,876,697)	3,431,693	(1,932,337)	(13,519,660)	990,932	(5,184,788)	(9,027,058)	322,753	208,816	18,123,700
1998	(2,244,105)	(439,496)	(1,385,473)	(10,955,475)	(66,088)	(1,888,975)	(4,963,075)	(56,675)	(87,016)	(25,947,387)
1999	(2,980,122)	2,245,840	(2,587,958)	(15,232,207)	739,971	(5,831,573)	(9,811,777)	157,469	(12,528)	(2,633,688)
2000	(5,560,100)	10,567,963	(7,455,000)	(27,892,500)	3,280,456	(11,172,500)	(19,726,500)	722,538	2,150,922	78,795,440
2001	(5,362,700)	12,264,756	(8,362,500)	(29,670,000)	3,339,732	(10,982,500)	(19,394,000)	724,882	2,257,362	85,198,553
2002	(5,508,400)	15,038,330	(8,865,000)	(31,582,500)	3,523,829	(9,972,500)	(17,714,600)	837,306	2,612,925	109,804,156
2003	(5,745,938)	14,615,408	(6,743,850)	(32,649,250)	2,455,226	(8,816,900)	(13,866,950)	876,551	2,494,035	94,077,602
2004	(5,713,555)	13,152,308	(6,919,575)	(33,302,350)	2,129,156	(8,721,550)	(13,792,800)	774,466	2,203,575	75,346,108
2005	(5,351,373)	12,997,456	(6,251,025)	(30,108,725)	3,899,395	(13,739,575)	(21,737,350)	930,152	2,523,249	95,424,577
2006	(5,410,640)	13,505,865	(6,316,725)	(30,413,625)	4,203,023	(14,283,625)	(22,835,700)	910,657	2,582,334	102,502,153
2007	(5,487,109)	13,520,816	(6,395,700)	(30,960,225)	4,337,636	(15,137,525)	(24,003,600)	847,988	2,533,314	100,521,552
2008	(5,594,927)	12,325,668	(6,548,625)	(31,216,650)	3,828,657	(15,018,475)	(23,732,600)	757,631	2,263,377	84,198,900
2009	(5,599,674)	12,930,813	(6,526,500)	(31,566,025)	4,041,143	(15,241,625)	(24,070,050)	788,344	2,355,132	88,694,050
2010	(5,647,379)	13,872,171	(6,596,625)	(31,860,925)	4,310,775	(15,363,925)	(24,382,250)	829,331	2,477,577	103,019,829
2011	(5,693,157)	14,028,358	(6,650,250)	(32,188,175)	4,484,514	(15,968,250)	(25,324,900)	829,678	2,478,612	102,674,749
2012	(5,786,264)	14,721,029	(6,829,725)	(32,405,200)	4,487,908	(15,350,650)	(24,424,750)	861,546	2,573,817	107,378,874
2013	(5,775,031)	16,631,250	(6,846,000)	(32,831,750)	5,172,859	(15,930,550)	(25,368,450)	955,088	2,853,267	134,923,924
2014	(5,799,048)	17,973,003	(6,862,800)	(32,782,050)	5,807,359	(16,535,550)	(26,309,150)	1,032,868	3,085,632	149,785,068
2015	(5,888,677)	18,650,013	(7,063,725)	(33,390,200)	5,838,274	(16,379,725)	(26,031,050)	1,049,931	3,136,605	157,045,642
2016	(5,951,375)	19,243,518	(7,156,875)	(34,005,575)	5,980,491	(16,562,650)	(26,356,050)	1,061,706	3,171,786	165,104,315
2017	(5,906,866)	18,890,415	(7,174,350)	(33,978,600)	5,961,376	(16,738,275)	(26,679,950)	1,044,895	3,121,560	159,047,960
2018	(5,969,705)	19,540,870	(7,497,975)	(34,012,075)	5,893,636	(16,051,100)	(25,574,700)	1,078,073	3,220,680	163,205,822
2019	(6,016,799)	20,488,712	(7,434,300)	(34,727,425)	6,787,020	(17,748,700)	(28,579,150)	1,107,242	3,307,818	181,782,200
2020	(5,985,826)	19,313,133	(7,439,925)	(34,666,150)	6,115,734	(17,147,525)	(27,440,000)	1,040,963	3,109,815	161,741,996
2021	(6,012,334)	19,366,184	(7,505,625)	(34,811,350)	6,164,853	(17,287,900)	(27,699,150)	1,039,087	3,104,208	161,645,652
2022	(6,040,064)	18,628,915	(7,496,625)	(34,809,700)	5,974,811	(17,364,050)	(27,831,400)	1,002,095	2,993,697	151,374,347
2023	(6,055,527)	18,799,229	(7,534,575)	(34,804,325)	6,010,494	(17,354,700)	(27,815,700)	1,008,668	3,013,335	154,925,259
2024	(6,029,865)	17,973,003	(7,548,000)	(34,803,550)	5,807,359	(17,358,975)	(27,823,450)	1,032,868	3,085,632	144,731,934
2025	(6,001,712)	19,283,316	(7,450,050)	(34,514,225)	6,235,332	(17,359,025)	(27,823,500)	1,046,098	3,125,154	160,250,989
2026	(6,065,585)	19,866,223	(7,632,075)	(35,124,800)	6,284,617	(17,358,975)	(27,823,450)	1,054,370	3,149,868	169,875,398
2027	(6,023,520)	19,309,741	(7,471,275)	(34,768,475)	6,187,079	(17,391,000)	(27,874,650)	1,036,050	3,095,136	161,796,128
2028	(6,002,276)	19,464,342	(7,494,675)	(34,815,075)	6,213,307	(17,330,950)	(27,773,450)	1,044,354	3,119,946	164,100,280
2029	(6,012,193)	19,178,511	(7,507,125)	(34,810,950)	6,133,527	(17,358,950)	(27,823,500)	1,029,018	3,074,130	159,420,411
2030	(6,002,370)	19,357,229	(7,494,825)	(34,815,050)	6,190,697	(17,359,000)	(27,823,550)	1,038,606	3,102,774	162,863,361
2031	(6,005,989)	18,885,628	(7,813,125)	(34,452,000)	5,674,546	(16,250,975)	(25,948,650)	1,022,208	3,053,784	151,952,237
2032	(6,076,113)	19,523,262	(7,908,300)	(34,774,175)	6,456,420	(17,854,700)	(28,777,350)	1,045,770	3,124,176	165,975,705
2033	(6,041,803)	20,580,836	(7,942,800)	(34,611,900)	6,258,810	(16,440,850)	(26,412,100)	1,106,434	3,305,406	175,202,869
2034	(6,071,272)	19,756,997	(7,981,350)	(34,688,400)	6,553,502	(17,873,775)	(28,818,550)	1,059,898	3,166,383	168,797,401
2035	(6,073,246)	19,398,457	(7,716,375)	(35,001,675)	6,200,401	(17,376,700)	(27,951,400)	1,034,977	3,091,932	161,470,990
Total	(228,776,027)	658,766,088	(269,281,577)	(1,422,456,955)	204,316,832	(659,993,563)	(1,099,615,131)	40,015,795	103,228,227	5,048,391,786

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	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2001	16,700	40,080	56,780	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2002	17,075	40,540	57,615	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2003	17,450	41,000	58,450	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2004	17,825	41,450	59,275	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2005	18,200	41,500	59,700	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2006	18,525	41,550	60,075	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2007	18,850	41,600	60,450	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2008	19,175	41,650	60,825	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2009	19,500	41,700	61,200	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2010	19,825	41,750	61,575	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2011	20,150	41,800	61,950	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2012	20,475	41,850	62,325	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2013	20,750	41,900	62,650	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2014	21,125	41,950	63,075	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2015	21,800	42,000	63,800	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2016	22,425	42,000	64,425	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2017	23,050	42,000	65,050	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2018	23,675	42,000	65,675	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2019	24,300	42,000	66,300	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2020	24,900	42,000	66,900	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2021	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2022	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2023	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2024	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2025	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2026	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2027	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2028	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2029	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2030	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2031	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2032	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2033	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2034	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2035	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
Total	907,565	1,848,396	2,755,961	3,286,607	2,459,248	6,510,783	12,256,638	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	88,600	772,000	860,600	3,100	4,800	62,611	979,211
1985	47,200	3,000	93,900	821,100	915,000	3,400	4,900	45,549	1,019,049
1986	49,300	3,000	98,400	835,246	933,646	3,700	5,100	97,200	1,091,946
1987	51,400	3,000	104,100	919,400	1,023,500	4,000	5,200	101,400	1,188,500
1988	53,500	3,000	108,900	965,700	1,074,600	4,000	5,400	105,600	1,246,100
1989	55,600	3,000	113,200	999,100	1,112,300	4,000	5,600	109,900	1,290,400
1990	28,850	3,000	119,600	1,033,800	1,153,400	4,000	5,700	118,500	1,313,450
1991	53,411	3,000	119,600	1,033,800	1,153,400	4,000	5,700	118,500	1,338,011
1992	57,700	3,000	119,600	1,033,800	1,153,400	4,000	5,700	118,500	1,342,300
1993	57,700	3,000	119,600	1,033,800	1,153,400	4,000	5,700	118,500	1,342,300
1994	57,700	3,000	119,600	1,033,800	1,153,400	4,000	5,700	118,500	1,342,300
1995	57,700	3,000	119,600	1,033,800	1,153,400	4,000	5,700	118,500	1,342,300
1996	53,370	3,000	119,600	997,460	1,117,060	4,000	5,700	118,500	1,301,630
1997	53,370	3,000	119,600	993,130	1,112,730	4,000	5,700	118,500	1,297,300
1998	53,370	3,000	119,600	968,130	1,087,730	4,000	5,700	118,500	1,272,300
1999	53,370	3,000	119,600	968,130	1,087,730	4,000	5,700	118,500	1,272,300
2000	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2001	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2002	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2003	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2004	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2005	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2006	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2007	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2008	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2009	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2010	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2011	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2012	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2013	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2014	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2015	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2016	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2017	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2018	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2019	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2020	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2021	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2022	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2023	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2024	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2025	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2026	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2027	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2028	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2029	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2030	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2031	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2032	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2033	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2034	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
2035	53,370	3,000	119,600	901,130	1,020,730	4,000	5,700	118,500	1,205,300
Total	3,226,396	199,000	6,913,900	53,814,646	60,728,546	233,900	352,822	6,910,055	71,650,719

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	21,300	102,600	28,800
2001	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2002	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2003	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2004	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2005	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2006	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2007	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2008	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2009	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2010	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2011	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2012	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2013	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2014	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2015	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2016	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2017	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2018	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2019	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2020	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2021	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2022	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2023	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2024	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2025	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2026	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2027	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2028	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2029	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2030	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2031	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2032	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2033	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2034	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2035	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
Total	7,330,000	4,545,098	1,286,111	321,556	2,107,600	127,210	3,760,043	1,127,720	5,909,177	1,641,322

Table B-4

Annual Entitlements to Project Water

(Acre-Feet)

Calendar Year	Southern California Area				Feather River Area				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	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	2,565,900	9,600	2,890	1,510	14,000	0	4,121,631
2001	4,000	2,011,500	20,000	2,566,900	9,600	27,500	1,570	38,670	0	4,148,136
2002	4,000	2,011,500	20,000	2,566,900	9,600	27,500	1,630	38,730	0	4,149,031
2003	5,000	2,011,500	20,000	2,567,900	9,600	27,500	1,690	38,790	0	4,150,926
2004	6,000	2,011,500	20,000	2,568,900	9,600	27,500	1,750	38,850	0	4,152,811
2005	6,500	2,011,500	20,000	2,569,400	9,600	27,500	1,810	38,910	0	4,153,796
2006	7,000	2,011,500	20,000	2,569,900	9,600	27,500	1,880	38,980	0	4,154,741
2007	7,500	2,011,500	20,000	2,570,400	9,600	27,500	1,950	39,050	0	4,155,686
2008	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,020	39,120	0	4,165,931
2009	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,090	39,190	0	4,166,376
2010	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,160	39,260	0	4,166,821
2011	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,240	39,340	0	4,167,276
2012	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,320	39,420	0	4,167,731
2013	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,410	39,510	0	4,168,146
2014	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,500	39,600	0	4,168,661
2015	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,600	39,700	0	4,169,486
2016	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,170,211
2017	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,170,836
2018	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,171,461
2019	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,086
2020	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,686
2021	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2022	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2023	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2024	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2025	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2026	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2027	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2028	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2029	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2030	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2031	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2032	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2033	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2034	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2035	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
Total	747,200	112,360,272	988,000	142,251,309	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 Reach 1 SCWA (2)	North Bay Aqueduct Reach 3A SCWA (3)	North Bay Aqueduct Reach 3B NC FC&WCD (a (4)	North Bay Aqueduct Total (5)	South Bay Aqueduct Reach 1 ACWD (6)	South Bay Aqueduct Reach 1 AC FC&WCD (7)	South Bay Aqueduct Reach 2 AC FC&WCD (8)	South Bay Aqueduct Reach 4 AC FC&WCD (9)	South Bay Aqueduct Reach 5 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		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	1	9,725	5,392	15,118	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	14,497	5,286	34,492	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	16,029	17,501	4,341	37,871	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	0	15,191	19,562	5,304	40,057	0	148	5,048	8,227	0
2000	1,510	13,479	16,384	15,515	45,378	0	239	7,207	9,825	0
2001	1,570	21,200	18,880	16,700	56,780	0	388	8,464	12,360	0
2002	1,630	21,250	19,290	17,075	57,615	0	376	8,196	12,152	0
2003	1,690	21,300	19,700	17,450	58,450	0	400	8,731	11,891	0
2004	1,750	21,350	20,100	17,825	59,275	0	426	9,243	11,925	0
2005	1,864	21,400	20,100	18,200	59,700	0	614	15,716	20,593	0
2006	1,942	21,450	20,100	18,525	60,075	0	614	15,716	20,593	0
2007	2,020	21,500	20,100	18,850	60,450	0	614	15,716	20,593	0
2008	2,080	21,550	20,100	19,175	60,825	0	614	15,716	20,593	0
2009	2,140	21,600	20,100	19,500	61,200	0	614	15,716	20,593	0
2010	2,200	21,650	20,100	19,825	61,575	0	614	15,716	20,593	0
2011	2,260	21,700	20,100	20,150	61,950	0	614	15,716	20,593	0
2012	2,320	21,750	20,100	20,475	62,325	0	614	15,716	20,593	0
2013	2,396	21,800	20,100	20,750	62,650	0	614	15,716	20,593	0
2014	2,472	21,850	20,100	21,125	63,075	0	614	15,716	20,593	0
2015	2,548	21,900	20,100	21,800	63,800	0	614	15,716	20,593	0
2016	2,624	21,900	20,100	22,425	64,425	0	614	15,716	20,593	0
2017	2,700	21,900	20,100	23,050	65,050	0	614	15,716	20,593	0
2018	2,700	21,900	20,100	23,675	65,675	0	614	15,716	20,593	0
2019	2,700	21,900	20,100	24,300	66,300	0	614	15,716	20,593	0
2020	2,700	21,900	20,100	24,900	66,900	0	614	15,716	20,593	0
2021	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2022	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2023	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2024	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2025	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2026	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2027	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2028	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2029	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2030	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2031	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2032	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2033	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2034	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
2035	2,700	21,900	20,100	25,000	67,000	0	614	15,716	20,593	0
Total	96,788	875,851	890,995	951,869	2,718,715	53,844	39,396	686,944	822,414	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)	MWD (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	(11,100)	0	0	0	0
1999	1,444	13,133	5,326	16,226	52,945	102,497	4,871	0	0	0	0	0	0	0
2000	1,364	42,889	4,447	27,140	69,826	162,937	5,144	0	0	0	0	0	0	0
2001	875	18,571	15,736	18,764	100,000	175,158	5,700	0	0	0	0	0	0	0
2002	876	18,090	6,175	28,325	100,000	174,190	5,700	0	0	0	0	0	0	0
2003	873	19,187	3,932	33,048	100,000	178,062	5,700	0	0	0	0	0	0	0
2004	884	20,249	3,932	33,048	100,000	179,707	5,700	0	0	0	0	0	0	0
2005	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2006	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2007	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2008	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2009	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2010	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2011	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2012	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2013	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2014	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2015	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2016	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2017	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2018	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2019	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2020	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2021	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2022	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2023	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2024	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2025	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2026	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2027	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2028	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2029	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2030	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2031	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2032	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2033	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2034	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
2035	1,884	29,193	9,515	32,485	100,000	210,000	5,700	0	0	0	0	0	0	0
Total	90,962	1,211,248	595,892	1,358,360	6,065,026	10,935,808	343,775	300	200	0	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)	DRWD (26)	KCWA (M&I) (27)	KCWA (Ag) (28)	MWD (29)	CLWA (30)	TLBWSD (31)	OFWD (32)	KCWA (M&I) (33)	MWD (34)	KCWA (Ag) (35)	TLBWSD (36)	KCWA (M&I) (37)	CLWA (38)	DRWD (39)	KCWA (Ag) (40)
1962	0	0	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	0	0
1964	0	0	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	0	0
1966	0	0	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	0	0
1968	0	0	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	0	0
1970	0	0	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	0	0
1972	0	0	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	0	0
1974	0	0	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	0	0
1976	0	0	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	0	0
1978	0	0	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	0	0
1980	0	0	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	0	0
1982	0	0	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	0	0
1984	0	0	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	0	0
1986	0	0	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	0	0
1988	0	0	0	0	0	0	1,550	0	0	0	0	0	0	0	0	0
1989	0	0	0	18,831	0	0	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	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	10,823	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	27,200	0	28,200	0	5,095	1,624	2,000	0	0	31,200	0	18,157	0	0	10,043
1994	0	0	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	0	0	3,932	0	10,875	0	0	20,595
1996	0	0	1,125	81,507	0	0	4,000	0	0	0	0	0	3,424	0	0	69,704
1997	0	0	9,080	154,940	0	0	3,500	0	0	0	0	0	27,079	0	0	32,463
1998	0	0	0	0	0	0	0	0	20,400	0	33,340	3,000	3,998	0	200	62,081
1999	1,300	0	0	0	21,500	0	8,000	0	0	11,000	33,776	23,000	7,923	0	0	19,500
2000	0	0	0	0	0	0	0	0	0	0	0	0	1,798	0	0	176,590
2001	0	0	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	0	0
2003	0	0	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	0	0
2005	0	0	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	0	0
2007	0	0	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	0	0
2009	0	0	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	0	0
2011	0	0	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	0	0
2013	0	0	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	0	0
2015	0	0	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	0	0
2017	0	0	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	0	0
2019	0	0	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	0	0
2021	0	0	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	0	0
2023	0	0	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	0	0
2025	0	0	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	0	0
2027	0	0	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	0	0
2029	0	0	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	0	0
2031	0	0	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	0	0
2033	0	0	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	0	0
2035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2,800	38,023	10,205	305,254	21,500	5,095	18,674	2,000	20,400	11,000	110,508	26,000	73,254	2,100	200	396,238

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)													
	South San Joaquin Division													
	Reach 7		Reach 8C						Reach 8D					
Calendar Year	TLBWSD (41)	MWD (42)	KCWA (M&I) (43)	KCWA (Ag) (44)	DRWD (45)	TLBWSD (46)	EWSID (47)	CK (48)	KCWA (M&I) (49)	KCWA (Ag) (50)	DRWD (51)	CK (52)	SLOC FC&WCD (53)	TLBWSD (54)
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	25,100	1,978	900	0	0	26,360	0	0	0
1969	0	0	0	0	0	7,081	56	100	0	0	31,375	0	0	0
1970	0	0	0	0	0	0	3,942	0	0	0	40,407	0	0	3,408
1971	0	0	0	0	0	80,906	5,990	3,700	0	0	41,053	0	0	41,579
1972	0	0	0	0	0	144,843	5,795	1,400	0	0	42,443	0	0	113,550
1973	0	0	0	0	0	26,317	3,000	1,500	0	1,500	22,057	0	0	24,147
1974	0	0	0	0	0	32,603	3,000	1,500	0	0	33,390	0	0	39,686
1975	0	0	0	0	0	41,536	3,000	1,600	0	0	40,555	0	0	44,722
1976	0	0	0	0	0	26,595	3,000	1,600	0	0	41,421	0	0	32,216
1977	0	0	0	0	0	12,984	738	1,530	0	0	11,153	0	0	5,097
1978	0	0	0	0	0	3,934	454	2,070	0	0	51,747	0	0	8,119
1979	0	0	0	0	0	74,758	1,739	2,000	0	0	38,544	0	0	80,363
1980	0	0	0	0	0	35,140	894	2,200	0	0	41,000	0	0	40,304
1981	0	0	0	0	0	50,888	5,859	2,300	0	0	41,000	0	0	32,550
1982	0	0	0	0	0	4,405	361	1,536	0	0	41,000	214	0	14,146
1983	0	0	0	0	0	1,001	0	3,550	0	0	42,900	0	0	5
1984	0	0	0	0	0	3,677	0	3,100	0	0	45,100	0	0	2,066
1985	0	0	0	0	0	68,638	5,197	3,400	0	0	46,251	0	0	41,153
1986	0	0	0	0	0	40,017	1,170	3,700	0	0	50,249	0	0	39,338
1987	0	0	0	0	0	30,359	2,525	4,000	0	0	46,288	0	0	62,725
1988	0	0	0	0	0	46,281	3,475	4,000	0	0	47,994	0	0	48,035
1989	0	0	0	0	2,391	63,703	3,000	4,000	0	0	52,158	0	0	63,947
1990	0	0	0	0	0	23,504	1,279	2,000	0	161	36,296	0	0	32,066
1991	0	0	0	0	0	1,697	221	0	0	0	927	0	0	483
1992	0	0	0	0	280	15,982	1,354	1,806	0	0	12,667	0	0	30,746
1993	0	0	0	0	0	57,112	2,741	4,000	0	0	23,221	0	0	65,732
1994	0	0	0	0	0	21,510	1,666	2,116	0	1,726	28,793	0	0	40,852
1995	0	0	989	10,527	0	40,934	1,631	4,000	2,959	27,270	45,240	0	0	57,435
1996	0	0	0	1,500	95	84,130	1,868	4,000	0	1,455	52,722	0	100	148,745
1997	0	0	0	1,500	0	9,467	0	0	0	0	57,496	0	100	9,402
1998	0	0	0	1,000	90	8,956	542	15	0	20,000	49,435	0	0	8,721
1999	4,470	500	0	400	86	90,334	3,176	4,000	0	9,000	58,290	0	0	162,631
2000	0	0	0	0	0	80,481	4,706	3,600	0	0	64,381	0	0	125,887
2001	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2002	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2003	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2004	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2005	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2006	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2007	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2008	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2009	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2010	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2011	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2012	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2013	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2014	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2015	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2016	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2017	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2018	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2019	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2020	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2021	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2022	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2023	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2024	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2025	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2026	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2027	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2028	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2029	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2030	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2031	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2032	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2033	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2034	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2035	0	0	0	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
Total	4,470	500	989	14,927	2,942	2,913,873	179,357	215,223	2,959	61,112	3,171,863	214	200	3,908,356

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 (55)	KCWA (M&I) (56)	KCWA (Ag) (57)	TLBWSD (58)	MWD (59)	KCWA (M&I) (60)	TLBWSD (61)	AC FC&WCD (62)	KCWA (Ag) (63)	SCVWD (64)	ACWD (65)	TLBWSD (66)	KCWA (M&I) (67)	KCWA (Ag) (68)
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	9,529	0	0	212,495	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	5,945	53,597	0	44,496	775	0	0	233,862	0	0	0	2,696	72,645
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	4,900	0	72,013	0	125,000	3,577	900	0	157,385	35,000	10,000	0	1,111	104,823
1998	0	0	57,530	0	39,500	2,603	0	1,970	163,587	23,800	3,780	0	1,311	72,646
1999	0	0	72,734	0	75,850	1,657	0	22,910	190,787	30,000	16,100	0	2,127	92,262
2000	0	0	70,649	0	0	450	0	25,234	301,206	17,532	6,807	0	2,302	90,510
2001	0	0	78,173	0	0	488	0	27,342	287,870	0	7,500	0	1,950	127,263
2002	0	0	78,173	0	0	488	0	28,310	287,870	0	7,500	0	1,950	127,263
2003	0	0	79,684	0	0	500	0	26,918	277,635	0	5,020	0	2,000	126,508
2004	0	0	79,684	0	0	500	0	25,273	277,635	0	5,020	0	2,000	126,508
2005	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2006	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2007	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2008	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2009	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2010	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2011	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2012	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2013	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2014	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2015	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2016	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2017	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2018	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2019	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2020	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2021	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2022	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2023	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2024	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2025	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2026	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2027	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2028	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2029	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2030	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2031	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2032	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2033	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2034	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
2035	0	0	79,684	0	0	500	0	0	277,635	0	0	0	2,000	126,508
Total	5,097	29,309	4,887,373	1,855	429,846	140,941	900	157,957	13,787,652	151,332	67,927	7,157	177,324	7,238,450

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) (69)	KCWA (Ag) (70)	DRWD (71)	MWD (72)	KCWA (M&I) (73)	MWD (74)	TLBWSD (75)	KCWA (Ag) (76)	KCWA (M&I) (77)	KCWA (Ag) (78)	KCWA (M&I) (79)	KCWA (Ag) (80)
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	3,735	24,240	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	622	32,778	19	75,968
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	32,061	128,329	8,012	1,486	43,803	0	0	49,312	0	23,035	0	79,790
1998	28,258	88,998	5,925	24,234	29,444	5,500	0	40,085	0	15,706	0	58,132
1999	110,173	255,343	1,321	62,162	12,969	0	0	92,998	0	21,153	0	67,576
2000	95,323	186,781	0	60,627	10,791	0	0	59,762	0	27,321	0	59,281
2001	100,147	103,337	0	50,000	11,702	0	0	40,761	0	22,623	0	62,896
2002	100,147	103,337	0	50,000	11,702	0	0	40,761	0	22,623	0	62,896
2003	102,700	105,946	0	50,000	12,000	0	0	41,800	0	23,200	0	64,500
2004	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2005	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2006	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2007	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2008	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2009	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2010	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2011	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2012	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2013	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2014	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2015	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2016	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2017	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2018	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2019	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2020	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2021	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2022	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2023	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2024	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2025	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2026	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2027	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2028	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2029	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2030	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2031	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2032	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2033	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2034	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
2035	102,700	105,946	0	0	12,000	0	0	41,800	0	23,200	0	64,500
Total	5,088,752	6,062,820	20,389	304,013	666,961	5,500	3,500	2,490,608	24,473	1,439,197	3,714	3,973,522

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) (81)	KCWA (Ag) (82)	KCWA (M&I) (83)	KCWA (Ag) (84)	KCWA (M&I) (85)	KCWA (Ag) (86)	AVEKWA (87)	AVEKWA (88)	MWA (89)	MWA (90)	AVEKWA (91)	AVEKWA (92)
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	1,921	16,577	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	10	31,019	0	34,748	1,665	10,170	0	0	0	0	0	15,958
1988	1	37,165	16	41,978	1,925	8,987	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	33,512	0	36,281	3,997	17,048	0	0	64	0	0	28,834
1998	0	23,097	0	28,712	3,751	17,032	0	0	1,345	0	0	22,466
1999	0	31,489	0	36,801	3,316	24,071	0	0	1,439	0	0	30,944
2000	0	28,276	0	36,878	4,410	18,230	0	0	1,500	0	0	40,246
2001	0	30,619	0	40,371	4,291	18,333	0	0	1,500	0	0	103,750
2002	0	30,619	0	40,371	4,291	18,333	0	0	1,500	0	0	101,573
2003	0	31,400	0	41,400	4,400	18,800	0	0	1,500	0	0	99,256
2004	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	96,788
2005	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	34,532
2006	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	36,087
2007	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	37,717
2008	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	39,408
2009	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	41,174
2010	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	43,036
2011	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	44,980
2012	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	46,998
2013	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	49,109
2014	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,323
2015	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2016	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2017	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2018	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2019	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2020	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2021	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2022	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2023	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2024	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2025	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2026	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2027	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2028	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2029	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2030	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2031	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2032	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2033	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2034	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
2035	0	31,400	0	41,400	4,400	18,800	0	0	0	0	0	51,811
Total	1,034	1,849,345	24	2,382,853	230,713	1,008,092	2,000	15,226	8,848	0	0	2,570,144

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)								
	Mojave Division (continued)								
	Reach 20A			Reach 20B		Reach 21		Reach 22A	Reach 22B
Calendar Year	PWD (93)	MWA (94)	AVEKWA (95)	PWD (96)	AVEKWA (97)	LCID (98)	PWD (99)	AVEKWA (100)	MWD(d (101)
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	1,085	1,366	2,273	(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	377	0	32,409	12,901	36	342	0	5,684	0
2000	2,003	0	32,044	18,839	0	2,070	0	5,210	0
2001	351	0	29,841	20,949	0	2,300	0	4,809	0
2002	351	0	31,768	20,949	0	2,300	0	5,059	0
2003	351	0	33,818	20,949	0	2,300	0	5,326	0
2004	351	1,500	36,003	20,949	0	2,300	0	5,609	0
2005	351	1,500	95,072	20,949	1,792	2,300	0	7,004	0
2006	351	1,500	93,123	20,949	1,871	2,300	0	7,319	0
2007	351	1,500	91,077	20,949	1,955	2,300	0	7,651	0
2008	351	1,500	88,954	20,949	2,045	2,300	0	7,993	0
2009	351	1,500	86,739	20,949	2,135	2,300	0	8,352	0
2010	351	1,500	84,401	20,949	2,233	2,300	0	8,730	0
2011	351	1,500	81,966	20,949	2,333	2,300	0	9,121	0
2012	351	1,500	79,429	20,949	2,438	2,300	0	9,535	0
2013	351	1,500	76,780	20,949	2,549	2,300	0	9,962	0
2014	351	1,500	74,006	20,949	2,662	2,300	0	10,409	0
2015	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2016	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2017	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2018	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2019	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2020	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2021	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2022	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2023	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2024	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2025	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2026	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2027	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2028	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2029	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2030	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2031	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2032	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2033	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2034	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
2035	351	1,500	73,396	20,949	2,686	2,300	0	10,507	0
Total	24,556	57,429	2,926,991	845,271	85,403	95,813	2,349	392,239	(653,216)

d) In accordance with the Exchange Agreement between the noted agencies, MWD 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)								
	Mojave Division (continued)								Santa Ana Division
	Reach 22B					Reach 23	Reach 24		Reach 26A
Calendar Year	CVWD(d (102)	AVEKWA(e (103)	SCWA (104)	DWA(d (105)	MWA (106)	MWA (107)	CLAWA (108)	MWA (109)	MWD(f (110)
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	214,566
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	98,291
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	0	0	9,038	0	651	0	157,215
1998	0	0	0	0	2,580	0	187	0	36,770
1999	0	0	0	0	6,705	0	1,132	0	139,752
2000	0	0	0	0	9,500	0	2,150	0	491,263
2001	0	0	0	0	74,300	0	5,800	0	503,541
2002	0	0	0	0	74,300	0	5,800	0	591,443
2003	0	0	0	0	74,300	0	5,800	0	636,751
2004	0	0	0	0	74,300	0	5,800	0	651,602
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	0	402,027	2,447,008	272	234,272	22,185	27,160,568

e) 1988 advance entitlement.

f) In accordance with the Exchange Agreement between the noted agencies, MWD 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)

Calendar Year	California Aqueduct (continued)											
	Santa Ana Division (continued)											
	Reach 26A					Reach 28G	Reach 28H			Reach 28J		
	SBVMWD(g (111)	SGVMWD (112)	SGPWA (113)	CVWD(f (114)	DWA(f (115)	MWD (116)	CVWD (117)	DWA (118)	MWD (119)	CVWD (120)	DWA (121)	MWD (122)
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	61,841	0	0	4,588
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	62,219	102,622	0	0	0	144,906	0	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	6,582	7,708	77,473	1,027	4,839	50,411
1999	12,874	21,729	0	50,480	58,100	0	0	0	206,689	0	0	8,163
2000	25,000	15,140	0	42,323	58,234	0	0	0	404,838	0	0	4,557
2001	102,600	28,800	4,000	23,100	38,100	0	0	0	331,808	0	0	3,600
2002	102,600	28,800	4,000	23,100	38,100	0	0	0	327,405	0	0	3,600
2003	102,600	28,800	5,000	23,100	38,100	0	0	0	297,257	0	0	3,600
2004	102,600	28,800	6,000	23,100	38,100	0	0	0	312,307	0	0	3,600
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	3,902,572	1,262,630	535,200	1,160,024	1,763,113	18,942	6,582	7,708	13,667,726	1,027	4,839	1,881,876

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 (123)	VCFCD (124)	CVWD (125)	DWA (126)	MWD(h (127)	VCFCD (128)	CLWA (129)	SBCFC&WCD (130)	KCWA (M&I) (131)	KCWA (Ag) (132)
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	327,001	1,850	28,813	0	0	92,095
2000	0	3,150	0	0	630,574	1,850	29,250	0	0	85,378
2001	0	3,150	0	0	653,744	16,850	87,200	0	0	89,906
2002	0	3,150	0	0	584,625	16,850	87,200	0	0	89,906
2003	0	3,150	0	0	385,500	16,850	87,200	0	0	88,257
2004	0	3,150	0	0	446,765	16,850	87,200	0	0	88,257
2005	0	6,300	0	0	783,848	13,700	79,016	0	0	88,257
2006	0	6,300	0	0	797,618	13,700	86,632	0	0	88,257
2007	0	6,300	0	0	811,388	13,700	95,200	0	0	88,257
2008	0	6,300	0	0	825,159	13,700	95,200	0	0	88,257
2009	0	6,300	0	0	838,930	13,700	95,200	0	0	88,257
2010	0	6,300	0	0	852,699	13,700	95,200	0	0	88,257
2011	0	6,300	0	0	866,469	13,700	95,200	0	0	88,257
2012	0	6,300	0	0	880,237	13,700	95,200	0	0	88,257
2013	0	6,300	0	0	894,008	13,700	95,200	0	0	88,257
2014	0	6,300	0	0	907,778	13,700	95,200	0	0	88,257
2015	0	6,300	0	0	921,545	13,700	95,200	0	0	88,257
2016	0	6,300	0	0	935,316	13,700	95,200	0	0	88,257
2017	0	6,300	0	0	949,085	13,700	95,200	0	0	88,257
2018	0	6,300	0	0	962,854	13,700	95,200	0	0	88,257
2019	0	6,300	0	0	976,624	13,700	95,200	0	0	88,257
2020	0	6,300	0	0	990,397	13,700	95,200	0	0	88,257
2021	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2022	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2023	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2024	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2025	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2026	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2027	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2028	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2029	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2030	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2031	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2032	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2033	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2034	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
2035	0	6,300	0	0	997,748	13,700	95,200	0	0	88,257
Total	183	216,874	10,240	16,890	40,558,698	499,500	3,602,199	1,240	200	5,939,669

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 (133)	SLOCFC&WCD (134)	SLOCFC&WCD (135)	SLOCFC&WCD (136)	SBCFC&WCD (137)	Total (138)	Grand Total (139)
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	1,413,363	1,536,189
1981	12,700	0	0	0	0	1,779,479	1,918,342
1982	12,700	0	0	0	0	1,641,571	1,750,528
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	1,984,570	2,131,061
1988	11,534	0	0	0	0	2,221,538	2,384,434
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	2,173,352	2,314,259
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	2,263,966	2,404,254
1998	311	0	3,592	0	18,618	1,657,381	1,763,382
1999	4,086	0	3,743	0	20,137	2,755,037	2,897,591
2000	11,430	0	3,939	0	32,545	3,517,990	3,727,815
2001	8,000	0	25,000	0	45,486	3,408,721	3,642,229
2002	8,000	0	25,000	0	45,486	3,424,069	3,657,504
2003	8,000	0	25,000	0	45,486	3,237,232	3,475,434
2004	8,000	0	0	25,000	45,486	3,277,753	3,518,485
2005	16,184	0	0	25,000	45,486	3,411,536	3,683,100
2006	8,568	0	0	25,000	45,486	3,442,036	3,714,053
2007	0	0	0	25,000	45,486	3,481,836	3,754,306
2008	0	0	0	25,000	45,486	3,511,836	3,784,741
2009	0	0	0	25,000	45,486	3,541,836	3,815,176
2010	0	0	0	25,000	45,486	3,571,836	3,845,611
2011	0	0	0	25,000	45,486	3,601,836	3,876,046
2012	0	0	0	25,000	45,486	3,631,836	3,906,481
2013	0	0	0	25,000	45,486	3,661,836	3,936,882
2014	0	0	0	25,000	45,486	3,692,636	3,968,183
2015	0	0	0	25,000	45,486	3,717,636	3,993,984
2016	0	0	0	25,000	45,486	3,742,636	4,019,685
2017	0	0	0	25,000	45,486	3,767,636	4,045,386
2018	0	0	0	25,000	45,486	3,792,636	4,071,011
2019	0	0	0	25,000	45,486	3,817,636	4,096,636
2020	0	0	0	25,000	45,486	3,842,636	4,122,236
2021	0	0	0	25,000	45,486	3,855,986	4,135,686
2022	0	0	0	25,000	45,486	3,855,986	4,135,686
2023	0	0	0	25,000	45,486	3,855,986	4,135,686
2024	0	0	0	25,000	45,486	3,855,986	4,135,686
2025	0	0	0	25,000	45,486	3,855,986	4,135,686
2026	0	0	0	25,000	45,486	3,855,986	4,135,686
2027	0	0	0	25,000	45,486	3,855,986	4,135,686
2028	0	0	0	25,000	45,486	3,855,986	4,135,686
2029	0	0	0	25,000	45,486	3,855,986	4,135,686
2030	0	0	0	25,000	45,486	3,855,986	4,135,686
2031	0	0	0	25,000	45,486	3,855,986	4,135,686
2032	0	0	0	25,000	45,486	3,855,986	4,135,686
2033	0	0	0	25,000	45,486	3,855,986	4,135,686
2034	0	0	0	25,000	45,486	3,855,986	4,135,686
2035	0	0	0	25,000	45,486	3,855,986	4,135,686
Total	388,270	0	87,373	800,000	1,670,749	179,436,732	193,188,043

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 County FC&WCD(a (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	9,726	15,118	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	29,206	34,492	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	33,530	37,871	27,522	24,063	95,601	147,186	1,199	7,439	8,638
1998	5,359	29,766	35,125	17,941	19,075	63,410	100,426	3,592	18,618	22,210
1999	5,304	34,753	40,057	50,910	37,652	82,945	171,507	3,743	20,137	23,880
2000	15,515	29,863	45,378	86,758	38,394	87,358	212,510	3,939	32,545	36,484
2001	16,700	40,080	56,780	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2002	17,075	40,540	57,615	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2003	17,450	41,000	58,450	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2004	17,825	41,450	59,275	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2005	18,200	41,500	59,700	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2006	18,525	41,550	60,075	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2007	18,850	41,600	60,450	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2008	19,175	41,650	60,825	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2009	19,500	41,700	61,200	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2010	19,825	41,750	61,575	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2011	20,150	41,800	61,950	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2012	20,475	41,850	62,325	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2013	20,750	41,900	62,650	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2014	21,125	41,950	63,075	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2015	21,800	42,000	63,800	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2016	22,425	42,000	64,425	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2017	23,050	42,000	65,050	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2018	23,675	42,000	65,675	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2019	24,300	42,000	66,300	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2020	24,900	42,000	66,900	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2021	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2022	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2023	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2024	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2025	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2026	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2027	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2028	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2029	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2030	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2031	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2032	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2033	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2034	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2035	25,000	42,000	67,000	68,000	42,000	100,000	210,000	25,000	45,486	70,486
Total	951,869	1,766,846	2,718,715	3,008,921	2,087,745	6,216,558	11,313,224	887,573	1,671,989	2,559,562

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	75,444	759,738
1981	41,000	5,859	75,758	615,642	691,400	2,300	4,300	83,438	828,297
1982	41,000	361	47,477	697,823	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	117,174	852,731	969,905	4,000	5,625	93,084	1,121,427
1988	47,994	3,475	122,409	887,111	1,009,520	4,000	4,412	95,866	1,165,267
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	128,316	1,039,614	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	71,308	0	120,708	987,451	1,108,159	0	5,238	22,369	1,207,074
1998	55,650	542	89,765	768,825	858,590	15	4,401	20,677	939,875
1999	59,697	3,176	138,165	1,039,985	1,178,150	4,000	4,871	289,735	1,539,629
2000	64,381	4,706	115,074	1,140,862	1,255,936	3,600	5,144	206,368	1,540,135
2001	53,370	3,000	118,578	902,152	1,020,730	4,000	5,700	118,500	1,205,300
2002	53,370	3,000	118,578	902,152	1,020,730	4,000	5,700	118,500	1,205,300
2003	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2004	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2005	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2006	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2007	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2008	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2009	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2010	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2011	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2012	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2013	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2014	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2015	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2016	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2017	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2018	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2019	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2020	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2021	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2022	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2023	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2024	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2025	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2026	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2027	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2028	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2029	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2030	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2031	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2032	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2033	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2034	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
2035	53,370	3,000	121,600	899,130	1,020,730	4,000	5,700	118,500	1,205,300
Total	3,256,360	179,357	6,472,377	51,967,929	58,440,306	215,437	345,775	6,886,985	69,324,220

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	34,089	27,988	19,431	1,849	31,500	1,085	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	23,039	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	10,374	11,861	9,654	18,175
1998	52,926	20,093	85,709	187	70,647	404	3,925	8,752	1,878	9,310
1999	69,073	32,899	50,480	1,132	58,100	342	8,144	13,278	12,874	21,729
2000	77,500	40,680	42,323	2,150	58,234	2,070	11,000	20,842	25,000	15,140
2001	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2002	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2003	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2004	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2005	138,400	95,200	23,100	5,800	38,100	2,300	30,000	21,300	102,600	28,800
2006	138,400	95,200	23,100	5,800	38,100	2,300	35,000	21,300	102,600	28,800
2007	138,400	95,200	23,100	5,800	38,100	2,300	40,000	21,300	102,600	28,800
2008	138,400	95,200	23,100	5,800	38,100	2,300	45,000	21,300	102,600	28,800
2009	138,400	95,200	23,100	5,800	38,100	2,300	50,000	21,300	102,600	28,800
2010	138,400	95,200	23,100	5,800	38,100	2,300	55,000	21,300	102,600	28,800
2011	138,400	95,200	23,100	5,800	38,100	2,300	60,000	21,300	102,600	28,800
2012	138,400	95,200	23,100	5,800	38,100	2,300	65,000	21,300	102,600	28,800
2013	138,400	95,200	23,100	5,800	38,100	2,300	70,000	21,300	102,600	28,800
2014	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2015	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2016	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2017	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2018	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2019	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2020	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2021	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2022	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2023	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2024	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2025	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2026	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2027	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2028	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2029	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2030	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2031	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2032	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2033	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2034	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2035	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
Total	5,992,499	3,997,664	1,429,062	234,272	2,194,577	95,813	2,535,742	872,176	3,902,572	1,262,630

c) Devil's Den Water District merged with Castaic Lake Water Agency effective January 1, 1992.

Table B-5B

Annual Water Quantities Delivered to Each Contractor

(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	1,536,456
1981	0	795,846	0	951,182	0	221	355	576	0	1,918,563
1982	0	691,192	0	830,771	0	334	305	639	0	1,750,862
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	2,131,608
1988	0	902,564	0	1,056,271	303	385	523	1,211	0	2,385,122
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	818,737	746	256	444	1,446	0	2,315,261
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	1,003,254	1,005	185	231	1,421	0	2,405,444
1998	0	410,065	1,850	665,746	1,054	527	0	1,581	0	1,764,963
1999	0	852,617	1,850	1,122,518	1,096	286	0	1,382	0	2,898,973
2000	0	1,591,859	5,000	1,891,798	1,500	800	1,510	3,810	0	3,730,115
2001	4,000	1,542,693	20,000	2,098,093	9,600	2,890	1,570	14,060	0	3,654,719
2002	4,000	1,557,073	20,000	2,112,473	9,600	2,890	1,630	14,120	0	3,669,994
2003	5,000	1,373,108	20,000	1,929,508	9,600	2,890	1,690	14,180	0	3,487,924
2004	6,000	1,414,274	20,000	1,971,674	9,600	2,890	1,750	14,240	0	3,530,975
2005	7,000	1,623,150	20,000	2,135,750	9,600	27,500	1,864	38,964	0	3,720,200
2006	7,500	1,648,150	20,000	2,166,250	9,600	27,500	1,942	39,042	0	3,751,153
2007	17,300	1,673,150	20,000	2,206,050	9,600	27,500	2,020	39,120	0	3,791,406
2008	17,300	1,698,150	20,000	2,236,050	9,600	27,500	2,080	39,180	0	3,821,841
2009	17,300	1,723,150	20,000	2,266,050	9,600	27,500	2,140	39,240	0	3,852,276
2010	17,300	1,748,150	20,000	2,296,050	9,600	27,500	2,200	39,300	0	3,882,711
2011	17,300	1,773,150	20,000	2,326,050	9,600	27,500	2,260	39,360	0	3,913,146
2012	17,300	1,798,150	20,000	2,356,050	9,600	27,500	2,320	39,420	0	3,943,581
2013	17,300	1,823,150	20,000	2,386,050	9,600	27,500	2,396	39,496	0	3,973,982
2014	17,300	1,848,150	20,000	2,416,850	9,600	27,500	2,472	39,572	0	4,005,283
2015	17,300	1,873,150	20,000	2,441,850	9,600	27,500	2,548	39,648	0	4,031,084
2016	17,300	1,898,150	20,000	2,466,850	9,600	27,500	2,624	39,724	0	4,056,785
2017	17,300	1,923,150	20,000	2,491,850	9,600	27,500	2,700	39,800	0	4,082,486
2018	17,300	1,948,150	20,000	2,516,850	9,600	27,500	2,700	39,800	0	4,108,111
2019	17,300	1,973,150	20,000	2,541,850	9,600	27,500	2,700	39,800	0	4,133,736
2020	17,300	1,998,150	20,000	2,566,850	9,600	27,500	2,700	39,800	0	4,159,336
2021	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2022	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2023	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2024	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2025	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2026	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2027	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2028	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2029	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2030	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2031	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2032	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2033	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2034	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
2035	17,300	2,011,500	20,000	2,580,200	9,600	27,500	2,700	39,800	0	4,172,786
Total	535,200	83,406,953	716,374	107,175,534	346,859	873,742	96,788	1,317,389	0	194,408,644

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	0	9,725	9,725	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	1,422	37,871	39,293	0	0	17,501	17,501	0	0	4,341	4,341
1998	0	1,343	35,125	36,468	0	(6)	18,204	18,198	0	0	5,359	5,359
1999	0	2,556	40,057	42,613	0	0	19,562	19,562	0	296	5,304	5,600
2000	0	51	45,378	45,429	0	0	16,384	16,384	0	5	15,515	15,520
2001	0	51	56,780	56,831	0	0	18,880	18,880	0	5	16,700	16,705
2002	0	51	57,615	57,666	0	0	19,290	19,290	0	5	17,075	17,080
2003	0	51	58,450	58,501	0	0	19,700	19,700	0	5	17,450	17,455
2004	0	51	59,275	59,326	0	0	20,100	20,100	0	5	17,825	17,830
2005	0	51	59,700	59,751	0	0	20,100	20,100	0	5	18,200	18,205
2006	0	51	60,075	60,126	0	0	20,100	20,100	0	5	18,525	18,530
2007	0	51	60,450	60,501	0	0	20,100	20,100	0	5	18,850	18,855
2008	0	51	60,825	60,876	0	0	20,100	20,100	0	5	19,175	19,180
2009	0	51	61,200	61,251	0	0	20,100	20,100	0	5	19,500	19,505
2010	0	51	61,575	61,626	0	0	20,100	20,100	0	5	19,825	19,830
2011	0	51	61,950	62,001	0	0	20,100	20,100	0	5	20,150	20,155
2012	0	51	62,325	62,376	0	0	20,100	20,100	0	5	20,475	20,480
2013	0	51	62,650	62,701	0	0	20,100	20,100	0	5	20,750	20,755
2014	0	51	63,075	63,126	0	0	20,100	20,100	0	5	21,125	21,130
2015	0	51	63,800	63,851	0	0	20,100	20,100	0	5	21,800	21,805
2016	0	51	64,425	64,476	0	0	20,100	20,100	0	5	22,425	22,430
2017	0	51	65,050	65,101	0	0	20,100	20,100	0	5	23,050	23,055
2018	0	51	65,675	65,726	0	0	20,100	20,100	0	5	23,675	23,680
2019	0	51	66,300	66,351	0	0	20,100	20,100	0	5	24,300	24,305
2020	0	51	66,900	66,951	0	0	20,100	20,100	0	5	24,900	24,905
2021	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2022	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2023	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2024	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2025	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2026	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2027	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2028	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2029	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2030	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2031	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2032	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2033	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2034	0	51	67,000	67,051	0	0	20,100	20,100	0	5	25,000	25,005
2035	0	51	67,000	67,051	0	0	20,100	20,100	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)	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	91,427	(23,116)	2,121,366	7,672	2,197,349	(458,725)	1,738,624
1988	0	2,884	(698)	147,255	142	149,583	0	107,249	(35,484)	2,368,793	4,889	2,445,447	(303,583)	2,141,864
1989	0	2,673	3,296	142,269	152	148,390	0	117,603	(38,058)	2,829,107	8,135	2,916,787	421,131	3,337,918
1990	0	2,763	1,982	156,537	168	161,450	0	120,791	(318,420)	2,554,658	9,262	2,366,291	(218,200)	2,148,091
1991	0	2,637	(4,532)	50,259	150	48,514	0	80,106	265,223	539,748	4,879	889,956	210,643	1,100,599
1992	0	2,881	756	76,661	147	80,445	0	91,391	(18,371)	1,451,436	2,605	1,527,061	(138,456)	1,388,605
1993	0	1,940	(20,051)	105,971	143	88,003	0	149,372	(273,789)	2,279,323	2,609	2,157,515	849,249	3,006,764
1994	0	1,981	1,714	100,568	168	104,431	0	148,714	(28,269)	1,828,072	3,803	1,952,320	(417,358)	1,534,962
1995	0	1,188	(12,333)	76,640	146	65,641	0	173,074	(334,999)	2,003,475	2,533	1,844,083	230,553	2,074,636
1996	0	981	(1,990)	77,215	150	76,356	0	123,502	78,123	2,507,143	3,902	2,712,670	288,576	3,001,246
1997	0	1,575	5,016	102,186	155	108,932	527	135,106	(98,334)	2,366,152	2,594	2,406,045	(50,000)	2,356,045
1998	0	1,551	3,595	70,876	114	76,136	0	91,319	(346,039)	1,728,257	2,107	1,475,644	120,886	1,596,530
1999	0	2,957	(3,989)	102,497	139	101,604	0	194,347	392,647	2,857,534	4,323	3,448,851	398,636	3,847,487
2000	0	3,234	(6,006)	162,937	400	160,565	0	103,494	1,634	3,680,927	8,660	3,794,715	0	3,794,715
2001	0	3,251	2,979	175,158	400	181,788	0	103,585	18,308	3,583,879	8,660	3,714,432	0	3,714,432
2002	0	3,229	(2,999)	174,190	400	174,820	0	103,582	(2,929)	3,598,259	8,660	3,707,572	0	3,707,572
2003	0	3,439	0	178,062	400	181,901	0	99,249	(74,844)	3,415,294	8,660	3,448,359		3,448,359
2004	0	3,439	0	179,707	400	183,546	0	129,916	76,561	3,457,460	8,660	3,672,597	195,999	3,868,596
2005	0	3,351	0	210,000	400	213,751	0	128,606	(59,387)	3,621,536	8,660	3,699,415	(121,668)	3,577,747
2006	0	3,351	0	210,000	400	213,751	0	127,993	(36,988)	3,652,036	8,660	3,751,701	(253,589)	3,498,112
2007	0	3,351	0	210,000	400	213,751	0	129,168	22,514	3,691,836	8,660	3,852,178	(77,232)	3,774,946
2008	0	3,351	0	210,000	400	213,751	0	128,939	6,985	3,721,836	8,660	3,866,420	222,755	4,089,175
2009	0	3,351	0	210,000	400	213,751	0	129,619	(15,186)	3,751,836	8,660	3,874,929	(140,708)	3,734,221
2010	0	3,351	0	210,000	400	213,751	0	128,523	4,288	3,781,836	8,660	3,923,307	182,970	4,106,277
2011	0	3,351	0	210,000	400	213,751	0	128,364	64,678	3,811,836	8,660	4,013,538	137,242	4,150,780
2012	0	3,351	0	210,000	400	213,751	0	128,100	(67,943)	3,841,836	8,660	3,910,653	(260,827)	3,649,826
2013	0	3,351	0	210,000	400	213,751	0	128,264	9,749	3,871,836	8,660	4,018,509	145,525	4,164,034
2014	0	3,351	0	210,000	400	213,751	0	130,280	16,625	3,902,636	8,660	4,058,201	(186,678)	3,871,523
2015	0	3,351	0	210,000	400	213,751	0	130,445	32,003	3,927,636	8,660	4,098,744	(31,516)	4,067,228
2016	0	3,351	0	210,000	400	213,751	0	128,415	(28,401)	3,952,636	8,660	4,061,310	205,134	4,266,444
2017	0	3,351	0	210,000	400	213,751	0	128,602	61,309	3,977,636	8,660	4,176,207	119,885	4,296,092
2018	0	3,351	0	210,000	400	213,751	0	128,369	(80,817)	4,002,636	8,660	4,058,848	(194,534)	3,864,314
2019	0	3,351	0	210,000	400	213,751	0	128,613	50,179	4,027,636	8,660	4,215,088	77,224	4,292,312
2020	0	3,351	0	210,000	400	213,751	0	128,690	(366)	4,052,636	8,660	4,189,620	(8,687)	4,180,933
2021	0	3,351	0	210,000	400	213,751	0	128,769	10,725	4,065,986	8,660	4,214,140	(1,095)	4,213,045
2022	0	3,351	0	210,000	400	213,751	0	128,846	(3,483)	4,065,986	8,660	4,200,009	(185,907)	4,014,102
2023	0	3,351	0	210,000	400	213,751	0	128,818	(18,971)	4,065,986	8,660	4,184,493	115,791	4,300,284
2024	0	3,351	0	210,000	400	213,751	0	128,625	11,289	4,065,986	8,660	4,214,560	79,858	4,294,418
2025	0	3,351	0	210,000	400	213,751	0	130,380	(12,518)	4,065,986	8,660	4,192,508	(247,205)	3,945,303
2026	0	3,351	0	210,000	400	213,751	0	128,700	24,308	4,065,986	8,660	4,227,654	246,850	4,474,504
2027	0	3,351	0	210,000	400	213,751	0	128,692	(17,799)	4,065,986	8,660	4,185,539	(12,304)	4,173,235
2028	0	3,351	0	210,000	400	213,751	0	128,783	12,291	4,065,986	8,660	4,215,720	15,430	4,231,150
2029	0	3,351	0	210,000	400	213,751	0	128,671	(9,046)	4,065,986	8,660	4,194,271	(10,778)	4,183,493
2030	0	3,351	0	210,000	400	213,751	0	128,777	20,756	4,065,986	8,660	4,224,179	124,586	4,348,765
2031	0	3,351	0	210,000	400	213,751	0	128,134	(97,726)	4,065,986	8,660	4,105,054	(259,831)	3,845,223
2032	0	3,351	0	210,000	400	213,751	0	128,005	84,999	4,065,986	8,660	4,287,650	138,527	4,426,177
2033	0	3,351	0	210,000	400	213,751	0	127,876	(94,652)	4,065,986	8,660	4,107,870	(184,372)	3,923,498
2034	0	3,351	0	210,000	400	213,751	0	127,725	69,593	4,065,986	8,660	4,271,964	120,375	4,392,339
2035	0	3,351	0	210,000	400	213,751	0	127,379	(242,659)	4,065,986	8,660	3,959,366	(587,531)	3,371,835

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)

Calendar Year	California Aqueduct (continued)											
	San Luis Division						South San Joaquin Division					
	Dos Amigos Pumping Plant						Buena Vista Pumping Plant					
				Deliveries						Deliveries		
	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	64,827	(25,707)	1,978,945	7,121	2,025,186	0	30,495	(25,522)	1,027,361	6,937	1,039,271
1988	0	72,679	(34,592)	2,217,126	4,490	2,259,703	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	46,855	(14,959)	1,769,991	8,879	1,810,766
1991	0	92,227	9,325	489,348	4,605	595,505	0	39,274	96,506	446,916	4,560	587,256
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	3,098	1,800,988	0	35,083	(88,211)	1,107,122	2,918	1,056,912
1995	0	137,937	(12,473)	1,921,666	1,669	2,048,799	0	33,963	(16,431)	706,742	1,669	725,943
1996	0	45,591	14,927	2,425,024	2,998	2,488,540	0	31,304	15,438	988,612	2,928	1,038,282
1997	527	107,033	(66,814)	2,247,628	2,090	2,290,464	0	42,670	40,852	1,054,461	2,076	1,140,059
1998	0	95,185	(338,076)	1,664,080	1,589	1,422,778	0	41,910	(106,487)	753,731	1,585	690,739
1999	0	94,371	3,057	2,750,166	3,285	2,850,879	0	48,607	4,051	1,131,826	3,279	1,187,763
2000	0	75,350	7,640	3,512,846	7,210	3,603,046	0	45,888	7,640	1,994,137	7,010	2,054,675
2001	0	75,424	15,329	3,403,021	7,210	3,500,984	0	45,962	15,329	2,219,226	7,010	2,287,527
2002	0	75,443	70	3,418,369	7,210	3,501,092	0	45,981	70	2,233,606	7,010	2,286,667
2003	0	70,900	(74,844)	3,231,532	7,210	3,234,798	0	41,438	(74,844)	2,055,208	7,010	2,028,812
2004	0	71,062	76,561	3,272,053	7,210	3,426,886	0	41,600	76,561	2,147,374	7,010	2,272,545
2005	0	70,341	(59,387)	3,405,836	7,210	3,424,000	0	40,879	(59,387)	2,303,266	7,010	2,291,768
2006	0	69,959	(36,988)	3,436,336	7,210	3,476,517	0	40,497	(36,988)	2,341,382	7,010	2,351,901
2007	0	70,076	22,514	3,476,136	7,210	3,575,936	0	40,614	22,514	2,389,750	7,010	2,459,888
2008	0	70,205	6,985	3,506,136	7,210	3,590,536	0	40,743	6,985	2,419,750	7,010	2,474,488
2009	0	70,102	(15,186)	3,536,136	7,210	3,598,262	0	40,640	(15,186)	2,449,750	7,010	2,482,214
2010	0	70,198	4,288	3,566,136	7,210	3,647,832	0	40,736	4,288	2,479,750	7,010	2,531,784
2011	0	70,389	64,678	3,596,136	7,210	3,738,413	0	40,927	64,678	2,509,750	7,010	2,622,365
2012	0	70,279	(67,943)	3,626,136	7,210	3,635,682	0	40,817	(67,943)	2,539,750	7,010	2,519,634
2013	0	70,217	9,749	3,656,136	7,210	3,743,312	0	40,755	9,749	2,569,750	7,010	2,627,264
2014	0	70,525	16,625	3,686,936	7,210	3,781,296	0	41,063	16,625	2,600,550	7,010	2,665,248
2015	0	70,654	32,003	3,711,936	7,210	3,821,803	0	41,192	32,003	2,625,550	7,010	2,705,755
2016	0	70,354	(28,401)	3,736,936	7,210	3,786,099	0	40,892	(28,401)	2,650,550	7,010	2,670,051
2017	0	70,586	61,309	3,761,936	7,210	3,901,041	0	41,124	61,309	2,675,550	7,010	2,784,993
2018	0	70,740	(80,817)	3,786,936	7,210	3,784,069	0	41,278	(80,817)	2,700,550	7,010	2,668,021
2019	0	70,564	50,179	3,811,936	7,210	3,939,889	0	41,102	50,179	2,725,550	7,010	2,823,841
2020	0	70,628	(366)	3,836,936	7,210	3,914,408	0	41,166	(366)	2,750,550	7,010	2,798,360
2021	0	70,711	10,725	3,850,286	7,210	3,938,932	0	41,249	10,725	2,763,900	7,010	2,822,884
2022	0	70,705	(3,483)	3,850,286	7,210	3,924,718	0	41,243	(3,483)	2,763,900	7,010	2,808,670
2023	0	70,696	(18,971)	3,850,286	7,210	3,909,221	0	41,234	(18,971)	2,763,900	7,010	2,793,173
2024	0	70,575	11,289	3,850,286	7,210	3,939,360	0	41,113	11,289	2,763,900	7,010	2,823,312
2025	0	70,638	(12,518)	3,850,286	7,210	3,915,616	0	41,176	(12,518)	2,763,900	7,010	2,799,568
2026	0	70,650	24,308	3,850,286	7,210	3,952,454	0	41,188	24,308	2,763,900	7,010	2,836,406
2027	0	70,563	(17,799)	3,850,286	7,210	3,910,260	0	41,101	(17,799)	2,763,900	7,010	2,794,212
2028	0	70,703	12,291	3,850,286	7,210	3,940,490	0	41,241	12,291	2,763,900	7,010	2,824,442
2029	0	70,630	(9,046)	3,850,286	7,210	3,919,080	0	41,168	(9,046)	2,763,900	7,010	2,803,032
2030	0	70,694	20,756	3,850,286	7,210	3,948,946	0	41,232	20,756	2,763,900	7,010	2,832,898
2031	0	70,566	(97,726)	3,850,286	7,210	3,830,336	0	41,104	(97,726)	2,763,900	7,010	2,714,288
2032	0	70,168	84,999	3,850,286	7,210	4,012,663	0	40,706	84,999	2,763,900	7,010	2,896,615
2033	0	70,373	(94,652)	3,850,286	7,210	3,833,217	0	40,911	(94,652)	2,763,900	7,010	2,717,169
2034	0	69,865	69,593	3,850,286	7,210	3,996,954	0	40,403	69,593	2,763,900	7,010	2,880,906
2035	0	69,205	(242,659)	3,850,286	7,210	3,684,042	0	39,743	(242,659)	2,763,900	7,010	2,567,994

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) / South San Joaquin Division (continued) / 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)	863,157	6,937	877,767
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	66,858	(14,959)	1,627,246	8,879	1,688,024	0	56,653	(14,959)	1,590,893	8,879	1,641,466
1991	0	40,564	105,176	446,148	4,560	596,448	0	34,016	105,176	446,148	4,560	589,900
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)	586,829	1,669	620,772	0	36,309	(16,431)	560,695	1,669	582,242
1996	0	58,437	15,438	836,819	2,928	913,622	0	43,710	15,438	800,633	2,928	862,709
1997	0	73,656	40,852	918,124	2,076	1,034,708	0	62,275	40,852	881,843	2,076	987,046
1998	0	61,137	(106,487)	656,796	1,585	613,031	0	47,523	(106,487)	628,084	1,585	570,705
1999	0	78,025	4,637	1,011,608	3,279	1,097,549	0	56,258	4,691	974,807	3,279	1,039,035
2000	0	42,258	7,640	1,879,259	7,010	1,936,167	0	42,008	7,640	1,842,381	7,010	1,899,039
2001	0	42,332	15,329	2,103,088	7,010	2,167,759	0	42,082	15,329	2,062,717	7,010	2,127,138
2002	0	42,351	70	2,117,468	7,010	2,166,899	0	42,101	70	2,077,097	7,010	2,126,278
2003	0	37,808	(74,844)	1,936,108	7,010	1,906,082	0	37,558	(74,844)	1,894,708	7,010	1,864,432
2004	0	37,970	76,561	2,028,274	7,010	2,149,815	0	37,720	76,561	1,986,874	7,010	2,108,165
2005	0	37,249	(59,387)	2,184,166	7,010	2,169,038	0	36,999	(59,387)	2,142,766	7,010	2,127,388
2006	0	36,867	(36,988)	2,222,282	7,010	2,229,171	0	36,617	(36,988)	2,180,882	7,010	2,187,521
2007	0	36,984	22,514	2,270,650	7,010	2,337,158	0	36,734	22,514	2,229,250	7,010	2,295,508
2008	0	37,113	6,985	2,300,650	7,010	2,351,758	0	36,863	6,985	2,259,250	7,010	2,310,108
2009	0	37,010	(15,186)	2,330,650	7,010	2,359,484	0	36,760	(15,186)	2,289,250	7,010	2,317,834
2010	0	37,106	4,288	2,360,650	7,010	2,409,054	0	36,856	4,288	2,319,250	7,010	2,367,404
2011	0	37,297	64,678	2,390,650	7,010	2,499,635	0	37,047	64,678	2,349,250	7,010	2,457,985
2012	0	37,187	(67,943)	2,420,650	7,010	2,396,904	0	36,937	(67,943)	2,379,250	7,010	2,355,254
2013	0	37,125	9,749	2,450,650	7,010	2,504,534	0	36,875	9,749	2,409,250	7,010	2,462,884
2014	0	37,433	16,625	2,481,450	7,010	2,542,518	0	37,183	16,625	2,440,050	7,010	2,500,868
2015	0	37,562	32,003	2,506,450	7,010	2,583,025	0	37,312	32,003	2,465,050	7,010	2,541,375
2016	0	37,262	(28,401)	2,531,450	7,010	2,547,321	0	37,012	(28,401)	2,490,050	7,010	2,505,671
2017	0	37,494	61,309	2,556,450	7,010	2,662,263	0	37,244	61,309	2,515,050	7,010	2,620,613
2018	0	37,648	(80,817)	2,581,450	7,010	2,545,291	0	37,398	(80,817)	2,540,050	7,010	2,503,641
2019	0	37,472	50,179	2,606,450	7,010	2,701,111	0	37,222	50,179	2,565,050	7,010	2,659,461
2020	0	37,536	(366)	2,631,450	7,010	2,675,630	0	37,286	(366)	2,590,050	7,010	2,633,980
2021	0	37,619	10,725	2,644,800	7,010	2,700,154	0	37,369	10,725	2,603,400	7,010	2,658,504
2022	0	37,613	(3,483)	2,644,800	7,010	2,685,940	0	37,363	(3,483)	2,603,400	7,010	2,644,290
2023	0	37,604	(18,971)	2,644,800	7,010	2,670,443	0	37,354	(18,971)	2,603,400	7,010	2,628,793
2024	0	37,483	11,289	2,644,800	7,010	2,700,582	0	37,233	11,289	2,603,400	7,010	2,658,932
2025	0	37,546	(12,518)	2,644,800	7,010	2,676,838	0	37,296	(12,518)	2,603,400	7,010	2,635,188
2026	0	37,558	24,308	2,644,800	7,010	2,713,676	0	37,308	24,308	2,603,400	7,010	2,672,026
2027	0	37,471	(17,799)	2,644,800	7,010	2,671,482	0	37,221	(17,799)	2,603,400	7,010	2,629,832
2028	0	37,611	12,291	2,644,800	7,010	2,701,712	0	37,361	12,291	2,603,400	7,010	2,660,062
2029	0	37,538	(9,046)	2,644,800	7,010	2,680,302	0	37,288	(9,046)	2,603,400	7,010	2,638,652
2030	0	37,602	20,756	2,644,800	7,010	2,710,168	0	37,352	20,756	2,603,400	7,010	2,668,518
2031	0	37,474	(97,726)	2,644,800	7,010	2,591,558	0	37,224	(97,726)	2,603,400	7,010	2,549,908
2032	0	37,076	84,999	2,644,800	7,010	2,773,885	0	36,826	84,999	2,603,400	7,010	2,732,235
2033	0	37,281	(94,652)	2,644,800	7,010	2,594,439	0	37,031	(94,652)	2,603,400	7,010	2,552,789
2034	0	36,773	69,593	2,644,800	7,010	2,758,176	0	36,523	69,593	2,603,400	7,010	2,716,526
2035	0	36,113	(242,659)	2,644,800	7,010	2,445,264	0	35,863	(242,659)	2,603,400	7,010	2,403,614

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 Power Plant					
	Initial Fill Water (51)	Operational Losses (52)	Reservoir Storage Changes (53)	Deliveries: Water Supply (54)	Deliveries: Recreation (55)	Total (56)	Initial Fill Water (57)	Operational Losses (58)	Reservoir Storage Changes (59)	Deliveries: Water Supply (60)	Deliveries: Recreation (61)	Total (62)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	5,446	8	0	0	0	5,454	0	0	0	0	0	0
1972	100,274	16,067	(6,558)	74,123	6,481	190,387	0	0	0	0	0	0
1973	204,638	34,051	1,329	207,808	1,147	448,973	0	0	0	0	0	0
1974	237,554	18,181	(15,295)	313,634	2,108	556,182	0	0	0	0	0	0
1975	103,352	20,183	(693)	573,219	3,358	699,419	0	0	0	0	0	0
1976	61,122	21,096	(152,171)	685,768	1,581	617,396	0	0	0	0	0	0
1977	0	18,424	(116,219)	236,086	560	138,851	0	0	0	0	0	0
1978	65,027	20,887	121,904	590,329	674	798,821	0	0	0	0	0	0
1979	12,302	46,332	(51,299)	568,338	502	576,175	0	0	0	0	0	0
1980	0	52,967	(134,009)	639,743	1,262	559,963	0	0	0	0	0	0
1981	0	40,602	23,359	938,482	4,112	1,006,555	0	0	0	0	0	0
1982	0	37,244	117,296	812,206	4,045	970,791	0	0	0	0	0	0
1983	0	40,690	(101,155)	431,182	7,291	378,008	0	0	0	0	0	0
1984	0	42,112	(115,214)	556,830	5,244	488,972	0	0	0	0	0	0
1985	0	45,265	139,988	792,477	4,804	982,534	0	0	0	0	0	0
1986	0	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)	851,322	6,937	862,317	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	(20,363)	716,360	1,407	702,090
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	441,217	4,560	584,952	0	17,908	34,422	177,308	394	230,032
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	15,438	779,918	2,928	835,641	0	7,247	(11,410)	493,852	565	490,254
1997	0	51,475	40,852	860,798	2,076	955,201	0	20,725	38,960	537,586	507	597,778
1998	0	48,601	(106,487)	607,301	1,585	551,000	0	21,456	16,361	398,385	363	436,565
1999	0	53,531	4,752	947,420	3,279	1,008,982	0	26,472	8,408	589,756	396	625,032
2000	0	40,458	7,640	1,819,741	7,010	1,874,849	0	23,149	3,049	1,154,917	1,630	1,182,745
2001	0	40,532	15,329	2,040,093	7,010	2,102,964	0	23,144	15,257	1,279,149	1,630	1,319,180
2002	0	40,551	70	2,054,473	7,010	2,102,104	0	23,164	(4)	1,362,648	1,630	1,387,438
2003	0	36,008	(74,844)	1,871,508	7,010	1,839,682	0	21,114	(29,034)	1,378,808	1,630	1,372,518
2004	0	36,170	76,561	1,963,674	7,010	2,083,415	0	21,266	20,133	1,409,709	1,630	1,452,738
2005	0	35,449	(59,387)	2,119,566	7,010	2,102,638	0	21,116	(11,777)	1,236,702	1,630	1,247,671
2006	0	35,067	(36,988)	2,157,682	7,010	2,162,771	0	20,801	(25,870)	1,253,432	1,630	1,249,993
2007	0	35,184	22,514	2,206,050	7,010	2,270,758	0	20,894	25,284	1,279,462	1,630	1,327,270
2008	0	35,313	6,985	2,236,050	7,010	2,285,358	0	21,000	(934)	1,295,691	1,630	1,317,387
2009	0	35,210	(15,186)	2,266,050	7,010	2,293,084	0	20,905	(9,404)	1,311,920	1,630	1,325,051
2010	0	35,306	4,288	2,296,050	7,010	2,342,654	0	21,001	3,921	1,328,151	1,630	1,354,703
2011	0	35,497	64,678	2,326,050	7,010	2,433,235	0	20,971	26,001	1,344,381	1,630	1,392,983
2012	0	35,387	(67,943)	2,356,050	7,010	2,330,504	0	20,962	(41,797)	1,360,613	1,630	1,341,408
2013	0	35,325	9,749	2,386,050	7,010	2,438,134	0	20,835	4,742	1,376,842	1,630	1,404,049
2014	0	35,633	16,625	2,416,850	7,010	2,476,118	0	21,002	2,759	1,393,872	1,630	1,419,263
2015	0	35,762	32,003	2,441,850	7,010	2,516,625	0	21,066	22,604	1,405,105	1,630	1,450,405
2016	0	35,462	(28,401)	2,466,850	7,010	2,480,921	0	20,829	(21,084)	1,416,334	1,630	1,417,709
2017	0	35,694	61,309	2,491,850	7,010	2,595,863	0	20,895	33,266	1,427,565	1,630	1,483,356
2018	0	35,848	(80,817)	2,516,850	7,010	2,478,891	0	20,998	(50,078)	1,438,796	1,630	1,411,346
2019	0	35,672	50,179	2,541,850	7,010	2,634,711	0	20,924	31,508	1,450,026	1,630	1,504,088
2020	0	35,736	(366)	2,566,850	7,010	2,609,230	0	20,947	(3,398)	1,461,253	1,630	1,480,432
2021	0	35,819	10,725	2,580,200	7,010	2,633,754	0	20,946	(1,117)	1,467,252	1,630	1,488,711
2022	0	35,813	(3,483)	2,580,200	7,010	2,619,540	0	20,940	(3,434)	1,467,252	1,630	1,486,388
2023	0	35,804	(18,971)	2,580,200	7,010	2,604,043	0	20,939	(18,638)	1,467,252	1,630	1,471,183
2024	0	35,683	11,289	2,580,200	7,010	2,634,182	0	20,881	21,309	1,467,252	1,630	1,511,072
2025	0	35,746	(12,518)	2,580,200	7,010	2,610,438	0	20,965	(11,624)	1,467,252	1,630	1,478,223
2026	0	35,758	24,308	2,580,200	7,010	2,647,276	0	20,930	13,030	1,467,252	1,630	1,502,842
2027	0	35,671	(17,799)	2,580,200	7,010	2,605,082	0	20,861	(6,161)	1,467,252	1,630	1,483,582
2028	0	35,811	12,291	2,580,200	7,010	2,635,312	0	20,961	4,006	1,467,252	1,630	1,493,849
2029	0	35,738	(9,046)	2,580,200	7,010	2,613,902	0	20,955	(913)	1,467,252	1,630	1,488,924
2030	0	35,802	20,756	2,580,200	7,010	2,643,768	0	20,930	8,528	1,467,252	1,630	1,498,340
2031	0	35,674	(97,726)	2,580,200	7,010	2,525,158	0	20,956	(31,057)	1,467,252	1,630	1,458,781
2032	0	35,276	84,999	2,580,200	7,010	2,707,485	0	20,865	43,953	1,467,252	1,630	1,533,700
2033	0	35,481	(94,652)	2,580,200	7,010	2,528,039	0	20,854	(37,929)	1,467,252	1,630	1,451,807
2034	0	34,973	69,593	2,580,200	7,010	2,691,776	0	20,769	28,588	1,467,252	1,630	1,518,239
2035	0	34,313	(242,659)	2,580,200	7,010	2,378,864	0	20,892	(49,219)	1,467,252	1,630	1,440,555

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 Power Plant					
	Initial Fill Water (63)	Operational Losses (64)	Reservoir Storage Changes (65)	Deliveries		Total (68)	Initial Fill Water (69)	Operational Losses (70)	Reservoir Storage Changes (71)	Deliveries		Total (74)
				Water Supply (66)	Recreation (67)					Water Supply (72)	Recreation (73)	
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)	377,531	1,239	391,052	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	163,913	394	214,290	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	(11,410)	424,252	565	422,921	0	0	0	0	0	0
1997	0	(1,124)	38,960	461,563	507	499,906	0	5,171	38,960	452,525	507	497,163
1998	0	(2,087)	16,361	334,965	363	349,602	0	11,496	16,361	332,385	363	360,605
1999	0	(940)	8,794	505,624	396	513,874	0	11,657	9,172	498,919	396	520,144
2000	0	17,799	3,049	1,053,005	1,430	1,075,283	0	14,329	3,049	1,043,505	1,430	1,062,313
2001	0	17,794	15,257	1,115,649	1,430	1,150,130	0	14,324	15,257	1,041,349	1,430	1,072,360
2002	0	17,814	(4)	1,199,148	1,430	1,218,388	0	14,344	(4)	1,124,848	1,430	1,140,618
2003	0	15,764	(29,034)	1,215,308	1,430	1,203,468	0	12,294	(29,034)	1,141,008	1,430	1,125,698
2004	0	15,916	20,133	1,246,209	1,430	1,283,688	0	12,446	20,133	1,171,909	1,430	1,205,918
2005	0	15,766	(11,777)	1,073,202	1,430	1,078,621	0	12,296	(11,777)	1,044,702	1,430	1,046,651
2006	0	15,451	(25,870)	1,089,932	1,430	1,080,943	0	11,981	(25,870)	1,056,432	1,430	1,043,973
2007	0	15,544	25,284	1,115,962	1,430	1,158,220	0	12,074	25,284	1,077,462	1,430	1,116,250
2008	0	15,650	(934)	1,132,191	1,430	1,148,337	0	12,180	(934)	1,088,691	1,430	1,101,367
2009	0	15,555	(9,404)	1,148,420	1,430	1,156,001	0	12,085	(9,404)	1,099,920	1,430	1,104,031
2010	0	15,651	3,921	1,164,651	1,430	1,185,653	0	12,181	3,921	1,111,151	1,430	1,128,683
2011	0	15,621	26,001	1,180,881	1,430	1,223,933	0	12,151	26,001	1,122,381	1,430	1,161,963
2012	0	15,612	(41,797)	1,197,113	1,430	1,172,358	0	12,142	(41,797)	1,133,613	1,430	1,105,388
2013	0	15,485	4,742	1,213,342	1,430	1,234,999	0	12,015	4,742	1,144,842	1,430	1,163,029
2014	0	15,652	2,759	1,230,372	1,430	1,250,213	0	12,182	2,759	1,156,072	1,430	1,172,443
2015	0	15,716	22,604	1,241,605	1,430	1,281,355	0	12,246	22,604	1,167,305	1,430	1,203,585
2016	0	15,479	(21,084)	1,252,834	1,430	1,248,659	0	12,009	(21,084)	1,178,534	1,430	1,170,889
2017	0	15,545	33,266	1,264,065	1,430	1,314,306	0	12,075	33,266	1,189,765	1,430	1,236,536
2018	0	15,648	(50,078)	1,275,296	1,430	1,242,296	0	12,178	(50,078)	1,200,996	1,430	1,164,526
2019	0	15,574	31,508	1,286,526	1,430	1,335,038	0	12,104	31,508	1,212,226	1,430	1,257,268
2020	0	15,597	(3,398)	1,297,753	1,430	1,311,382	0	12,127	(3,398)	1,223,453	1,430	1,233,612
2021	0	15,596	(1,117)	1,303,752	1,430	1,319,661	0	12,126	(1,117)	1,229,452	1,430	1,241,891
2022	0	15,590	(3,434)	1,303,752	1,430	1,317,338	0	12,120	(3,434)	1,229,452	1,430	1,239,568
2023	0	15,589	(18,638)	1,303,752	1,430	1,302,133	0	12,119	(18,638)	1,229,452	1,430	1,224,363
2024	0	15,531	21,309	1,303,752	1,430	1,342,022	0	12,061	21,309	1,229,452	1,430	1,264,252
2025	0	15,615	(11,624)	1,303,752	1,430	1,309,173	0	12,145	(11,624)	1,229,452	1,430	1,231,403
2026	0	15,580	13,030	1,303,752	1,430	1,333,792	0	12,110	13,030	1,229,452	1,430	1,256,022
2027	0	15,511	(6,161)	1,303,752	1,430	1,314,532	0	12,041	(6,161)	1,229,452	1,430	1,236,762
2028	0	15,611	4,006	1,303,752	1,430	1,324,799	0	12,141	4,006	1,229,452	1,430	1,247,029
2029	0	15,605	(913)	1,303,752	1,430	1,319,874	0	12,135	(913)	1,229,452	1,430	1,242,104
2030	0	15,580	8,528	1,303,752	1,430	1,329,290	0	12,110	8,528	1,229,452	1,430	1,251,520
2031	0	15,606	(31,057)	1,303,752	1,430	1,289,731	0	12,136	(31,057)	1,229,452	1,430	1,211,961
2032	0	15,515	43,953	1,303,752	1,430	1,364,650	0	12,045	43,953	1,229,452	1,430	1,286,880
2033	0	15,504	(37,929)	1,303,752	1,430	1,282,757	0	12,034	(37,929)	1,229,452	1,430	1,204,987
2034	0	15,419	28,588	1,303,752	1,430	1,349,189	0	11,949	28,588	1,229,452	1,430	1,271,419
2035	0	15,542	(49,219)	1,303,752	1,430	1,271,505	0	12,072	(49,219)	1,229,452	1,430	1,193,735

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 Power Plant						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	7,923	(11,335)	375,451	1,118	373,157	0	18,164	(10,252)	433,452	5,698	447,062
1988	0	11,090	2,238	499,285	861	513,474	0	20,461	(30,848)	507,169	3,389	500,171
1989	0	13,116	(5,487)	658,730	1,301	667,660	0	27,914	(40,463)	611,681	6,083	605,215
1990	0	13,439	(4,622)	728,723	1,281	738,821	0	33,666	(9,176)	791,355	7,491	823,336
1991	0	10,836	18,308	161,032	340	190,516	0	16,460	70,754	263,909	4,166	355,289
1992	0	9,157	(9,084)	328,354	371	328,798	0	8,238	(75,008)	435,661	1,572	370,463
1993	0	5,602	5,593	244,678	364	256,237	0	2,674	(124,283)	451,263	1,233	330,887
1994	0	10,915	(11,045)	393,690	357	393,917	0	18,688	(91,606)	490,819	2,488	420,389
1995	0	11,268	2,331	320,978	358	334,935	0	21,775	14,330	157,629	1,242	194,976
1996	0	9,496	13,015	417,656	494	440,661	0	30,121	26,848	286,066	2,363	345,398
1997	0	8,087	(19,685)	451,874	416	440,692	0	30,468	1,892	323,212	1,569	357,141
1998	0	6,700	16,643	332,198	310	355,851	0	26,851	(122,848)	208,916	1,222	114,141
1999	0	10,376	4,769	497,787	341	513,273	0	26,686	(3,637)	357,664	2,883	383,596
2000	0	10,124	2,049	1,041,355	1,250	1,054,778	0	17,259	4,591	664,824	5,380	692,054
2001	0	10,116	15,257	1,035,549	1,250	1,062,172	0	17,338	72	760,944	5,380	783,734
2002	0	10,136	253	1,119,048	1,250	1,130,687	0	17,337	74	691,825	5,380	714,616
2003	0	8,709	(1,873)	1,135,208	1,250	1,143,294	0	14,844	(45,810)	492,700	5,380	467,114
2004	0	8,752	4,466	1,166,109	1,250	1,180,577	0	14,854	56,428	553,965	5,380	630,627
2005	0	8,561	(16,027)	1,038,902	1,250	1,032,686	0	14,283	(47,610)	882,864	5,380	854,917
2006	0	8,512	(9,315)	1,050,632	1,250	1,051,079	0	14,216	(11,118)	904,250	5,380	912,728
2007	0	8,531	6,931	1,071,662	1,250	1,088,374	0	14,240	(2,770)	926,588	5,380	943,438
2008	0	8,481	(2,332)	1,082,891	1,250	1,090,290	0	14,263	7,919	940,359	5,380	967,921
2009	0	8,508	3,506	1,094,120	1,250	1,107,384	0	14,255	(5,782)	954,130	5,380	967,983
2010	0	8,504	10,523	1,105,351	1,250	1,125,628	0	14,255	367	967,899	5,380	987,901
2011	0	8,519	1,352	1,116,581	1,250	1,127,702	0	14,476	38,677	981,669	5,380	1,040,202
2012	0	8,482	(22,894)	1,127,813	1,250	1,114,651	0	14,375	(26,146)	995,437	5,380	989,046
2013	0	8,499	16,733	1,139,042	1,250	1,165,524	0	14,440	5,007	1,009,208	5,380	1,034,035
2014	0	8,522	(4,585)	1,150,272	1,250	1,155,459	0	14,581	13,866	1,022,978	5,380	1,056,805
2015	0	8,499	2,964	1,161,505	1,250	1,174,218	0	14,646	9,399	1,036,745	5,380	1,066,170
2016	0	8,483	(1,269)	1,172,734	1,250	1,181,198	0	14,583	(7,317)	1,050,516	5,380	1,063,162
2017	0	8,502	9,828	1,183,965	1,250	1,203,545	0	14,749	28,043	1,064,285	5,380	1,112,457
2018	0	8,484	(19,777)	1,195,196	1,250	1,185,153	0	14,800	(30,739)	1,078,054	5,380	1,067,495
2019	0	8,492	17,408	1,206,426	1,250	1,233,576	0	14,698	18,671	1,091,824	5,380	1,130,573
2020	0	8,483	(17,305)	1,217,653	1,250	1,210,081	0	14,739	3,032	1,105,597	5,380	1,128,748
2021	0	8,486	(398)	1,223,652	1,250	1,232,990	0	14,823	11,842	1,112,948	5,380	1,144,993
2022	0	8,486	13,735	1,223,652	1,250	1,247,123	0	14,823	(49)	1,112,948	5,380	1,133,102
2023	0	8,482	(8,417)	1,223,652	1,250	1,224,967	0	14,815	(333)	1,112,948	5,380	1,132,810
2024	0	8,462	689	1,223,652	1,250	1,234,053	0	14,752	(10,020)	1,112,948	5,380	1,123,060
2025	0	8,489	4,591	1,223,652	1,250	1,237,982	0	14,731	(894)	1,112,948	5,380	1,132,165
2026	0	8,475	(3,819)	1,223,652	1,250	1,229,558	0	14,778	11,278	1,112,948	5,380	1,144,384
2027	0	8,479	745	1,223,652	1,250	1,234,126	0	14,760	(11,638)	1,112,948	5,380	1,121,450
2028	0	8,481	(5,355)	1,223,652	1,250	1,228,028	0	14,800	8,285	1,112,948	5,380	1,141,413
2029	0	8,481	2,909	1,223,652	1,250	1,236,292	0	14,733	(8,133)	1,112,948	5,380	1,124,928
2030	0	8,480	296	1,223,652	1,250	1,233,678	0	14,822	12,228	1,112,948	5,380	1,145,378
2031	0	8,475	(1,976)	1,223,652	1,250	1,231,401	0	14,668	(66,669)	1,112,948	5,380	1,066,327
2032	0	8,449	18,821	1,223,652	1,250	1,252,172	0	14,361	41,046	1,112,948	5,380	1,173,735
2033	0	8,449	(23,419)	1,223,652	1,250	1,209,932	0	14,577	(56,723)	1,112,948	5,380	1,076,182
2034	0	8,443	21,651	1,223,652	1,250	1,254,996	0	14,154	41,005	1,112,948	5,380	1,173,487
2035	0	8,451	(31,434)	1,223,652	1,250	1,201,919	0	13,371	(193,440)	1,112,948	5,380	938,259

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	Warne Power Plant						Castaic Power Plant					
				Deliveries						Deliveries		
	Initial Fill Water (87)	Operational Losses (88)	Reservoir Storage Changes (89)	Water Supply (90)	Recreation (91)	Total (92)	Initial Fill Water (93)	Operational Losses (94)	Reservoir Storage Changes (95)	Water Supply (96)	Recreation (97)	Total (98)
	California Aqueduct (continued)											
	West Branch, California Aqueduct (continued)											
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)	(15,101)	786,519	3,419	760,825
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	26,848	286,066	2,363	336,468	0	(5,621)	19,088	286,066	2,362	301,895
1997	0	23,437	1,892	323,201	1,569	350,099	0	11,119	(1,802)	323,201	1,566	334,084
1998	0	26,864	(122,848)	208,909	1,222	114,147	0	24,544	(57,726)	208,909	1,222	176,949
1999	0	22,877	(6,019)	357,664	2,883	377,405	0	(2,615)	(5,710)	357,664	2,865	352,204
2000	0	15,349	4,591	664,824	5,380	690,144	0	9,691	4,591	661,674	2,330	678,286
2001	0	15,428	72	760,944	5,380	781,824	0	9,704	72	757,794	2,330	769,900
2002	0	15,427	74	691,825	5,380	712,706	0	9,702	74	688,675	2,330	700,781
2003	0	12,934	(45,810)	492,700	5,380	465,204	0	6,644	(52,712)	489,550	2,330	445,812
2004	0	12,944	56,428	553,965	5,380	628,717	0	6,659	56,428	550,815	2,330	616,232
2005	0	12,373	(47,610)	882,864	5,380	853,007	0	6,088	(47,610)	876,564	2,330	837,372
2006	0	12,306	(11,118)	904,250	5,380	910,818	0	6,021	(11,118)	897,950	2,330	895,183
2007	0	12,330	(2,770)	926,588	5,380	941,528	0	6,045	(2,770)	920,288	2,330	925,893
2008	0	12,353	7,919	940,359	5,380	966,011	0	6,068	7,919	934,059	2,330	950,376
2009	0	12,345	(5,782)	954,130	5,380	966,073	0	6,060	(5,782)	947,830	2,330	950,438
2010	0	12,345	367	967,899	5,380	985,991	0	6,060	367	961,599	2,330	970,356
2011	0	12,566	38,677	981,669	5,380	1,038,292	0	6,281	38,677	975,369	2,330	1,022,657
2012	0	12,465	(26,146)	995,437	5,380	987,136	0	6,180	(26,146)	989,137	2,330	971,501
2013	0	12,530	5,007	1,009,208	5,380	1,032,125	0	6,245	5,007	1,002,908	2,330	1,016,490
2014	0	12,671	13,866	1,022,978	5,380	1,054,895	0	6,386	13,866	1,016,678	2,330	1,039,260
2015	0	12,736	9,399	1,036,745	5,380	1,064,260	0	6,451	9,399	1,030,445	2,330	1,048,625
2016	0	12,673	(7,317)	1,050,516	5,380	1,061,252	0	6,388	(7,317)	1,044,216	2,330	1,045,617
2017	0	12,839	28,043	1,064,285	5,380	1,110,547	0	6,554	28,043	1,057,985	2,330	1,094,912
2018	0	12,890	(30,739)	1,078,054	5,380	1,065,585	0	6,605	(30,739)	1,071,754	2,330	1,049,950
2019	0	12,788	18,671	1,091,824	5,380	1,128,663	0	6,503	18,671	1,085,524	2,330	1,113,028
2020	0	12,829	3,032	1,105,597	5,380	1,126,838	0	6,544	3,032	1,099,297	2,330	1,111,203
2021	0	12,913	11,842	1,112,948	5,380	1,143,083	0	6,628	11,842	1,106,648	2,330	1,127,448
2022	0	12,913	(49)	1,112,948	5,380	1,131,192	0	6,628	(49)	1,106,648	2,330	1,115,557
2023	0	12,905	(333)	1,112,948	5,380	1,130,900	0	6,620	(333)	1,106,648	2,330	1,115,265
2024	0	12,842	(10,020)	1,112,948	5,380	1,121,150	0	6,557	(10,020)	1,106,648	2,330	1,105,515
2025	0	12,821	(894)	1,112,948	5,380	1,130,255	0	6,536	(894)	1,106,648	2,330	1,114,620
2026	0	12,868	11,278	1,112,948	5,380	1,142,474	0	6,583	11,278	1,106,648	2,330	1,126,839
2027	0	12,850	(11,638)	1,112,948	5,380	1,119,540	0	6,565	(11,638)	1,106,648	2,330	1,103,905
2028	0	12,890	8,285	1,112,948	5,380	1,139,503	0	6,605	8,285	1,106,648	2,330	1,123,868
2029	0	12,823	(8,133)	1,112,948	5,380	1,123,018	0	6,538	(8,133)	1,106,648	2,330	1,107,383
2030	0	12,912	12,228	1,112,948	5,380	1,143,468	0	6,627	12,228	1,106,648	2,330	1,127,833
2031	0	12,758	(66,669)	1,112,948	5,380	1,064,417	0	6,473	(66,669)	1,106,648	2,330	1,048,782
2032	0	12,451	41,046	1,112,948	5,380	1,171,825	0	6,166	41,046	1,106,648	2,330	1,156,190
2033	0	12,667	(56,723)	1,112,948	5,380	1,074,272	0	6,382	(56,723)	1,106,648	2,330	1,058,637
2034	0	12,244	41,005	1,112,948	5,380	1,171,577	0	5,959	41,005	1,106,648	2,330	1,155,942
2035	0	11,461	(193,440)	1,112,948	5,380	936,349	0	5,176	(193,440)	1,106,648	2,330	920,714

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)	Initial Fill Water (103)	Operational Losses (104)	Water Supply Delivery (105)	Total (106)
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	210	873	79,039	80,122	0	0	0	0
1969	0	1,042	62,064	63,106	0	0	0	0
1970	0	638	83,649	84,287	0	0	0	0
1971	0	3,455	110,971	114,426	0	0	0	0
1972	0	1,745	121,755	123,500	0	0	0	0
1973	0	5,479	78,645	84,124	0	0	0	0
1974	0	7,344	78,174	85,518	0	0	0	0
1975	0	5,819	85,216	91,035	0	0	0	0
1976	0	6,562	90,058	96,620	0	0	0	0
1977	0	5,777	40,579	46,356	0	0	0	0
1978	0	9,085	92,604	101,689	0	0	0	0
1979	0	10,896	123,155	134,051	0	0	0	0
1980	0	9,449	111,379	120,828	0	0	0	0
1981	0	13,232	109,754	122,986	0	0	0	0
1982	0	7,984	95,776	103,760	0	0	0	0
1983	0	5,710	100,518	106,228	0	0	0	0
1984	0	5,740	126,387	132,127	0	0	0	0
1985	0	7,563	120,823	128,386	0	0	0	0
1986	0	8,719	131,599	140,318	0	0	0	0
1987	0	11,363	128,080	139,443	0	0	0	0
1988	0	12,831	120,969	133,800	0	0	0	0
1989	0	11,454	116,801	128,255	0	0	0	0
1990	0	13,021	109,802	122,823	0	0	0	0
1991	0	5,802	1,496	7,298	0	0	0	0
1992	0	7,893	79,635	87,528	0	0	0	0
1993	0	9,282	94,921	104,203	0	0	0	0
1994	0	8,515	87,158	95,673	0	0	0	0
1995	0	6,986	94,536	101,522	0	0	0	0
1996	0	9,663	114,630	124,293	0	0	0	0
1997	527	8,343	110,428	119,298	527	0	8,538	9,065
1998	0	8,415	109,400	117,815	0	0	22,210	22,210
1999	0	2,441	120,061	122,502	0	0	23,880	23,880
2000	0	802	133,292	134,094	0	212	36,484	36,696
2001	0	802	168,392	169,194	0	212	70,486	70,698
2002	0	802	168,392	169,194	0	212	70,486	70,698
2003	0	802	166,743	167,545	0	212	70,486	70,698
2004	0	802	166,743	167,545	0	212	70,486	70,698
2005	0	802	174,927	175,729	0	212	70,486	70,698
2006	0	802	167,311	168,113	0	212	70,486	70,698
2007	0	802	158,743	159,545	0	212	70,486	70,698
2008	0	802	158,743	159,545	0	212	70,486	70,698
2009	0	802	158,743	159,545	0	212	70,486	70,698
2010	0	802	158,743	159,545	0	212	70,486	70,698
2011	0	802	158,743	159,545	0	212	70,486	70,698
2012	0	802	158,743	159,545	0	212	70,486	70,698
2013	0	802	158,743	159,545	0	212	70,486	70,698
2014	0	802	158,743	159,545	0	212	70,486	70,698
2015	0	802	158,743	159,545	0	212	70,486	70,698
2016	0	802	158,743	159,545	0	212	70,486	70,698
2017	0	802	158,743	159,545	0	212	70,486	70,698
2018	0	802	158,743	159,545	0	212	70,486	70,698
2019	0	802	158,743	159,545	0	212	70,486	70,698
2020	0	802	158,743	159,545	0	212	70,486	70,698
2021	0	802	158,743	159,545	0	212	70,486	70,698
2022	0	802	158,743	159,545	0	212	70,486	70,698
2023	0	802	158,743	159,545	0	212	70,486	70,698
2024	0	802	158,743	159,545	0	212	70,486	70,698
2025	0	802	158,743	159,545	0	212	70,486	70,698
2026	0	802	158,743	159,545	0	212	70,486	70,698
2027	0	802	158,743	159,545	0	212	70,486	70,698
2028	0	802	158,743	159,545	0	212	70,486	70,698
2029	0	802	158,743	159,545	0	212	70,486	70,698
2030	0	802	158,743	159,545	0	212	70,486	70,698
2031	0	802	158,743	159,545	0	212	70,486	70,698
2032	0	802	158,743	159,545	0	212	70,486	70,698
2033	0	802	158,743	159,545	0	212	70,486	70,698
2034	0	802	158,743	159,545	0	212	70,486	70,698
2035	0	802	158,743	159,545	0	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	151	0	0	0	603	0	754	2,888	3,642
Grizzly Valley Dam and Lake Davis	55	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	207	0	0	0	642	0	849	16,555	17,404
Oroville Division									
Multipurpose Facilities	5,989	152	0	0	375,950	0	382,091	90,795	472,886
Specific Power Facilities	441	0	0	0	96,439	0	96,880	568	97,448
Total, Oroville Division	6,430	152	0	0	472,389	0	478,971	91,363	570,334
California Aqueduct									
North San Joaquin Division	178	104	0	0	80,825	0	81,107	2,880	83,987
San Luis Division	11,774	73	0	0	110,935	0	122,782	3,827	126,609
Total, California Aqueduct	11,952	177	0	0	191,760	0	203,889	6,707	210,596
Delta Facilities	32,743	10,920	0	0	324,358	0	368,021	47,886	415,907
Planning and Pre-operation	6,028	14,006	0	0	127,265	0	147,299	0	147,299
Total, Conservation Facilities	57,360	25,255	0	0	1,116,414	0	1,199,029	162,511	1,361,540
Transportation Facilities									
Upper Feather Division									
Grizzly Valley Pipeline	3	0	181	0	0	341	525	0	525
North Bay Aqueduct	649	5	676	0	0	93,045	94,375	0	94,375
South Bay Aqueduct	2,199	54	1,659	0	0	55,949	59,861	21,673	81,534
California Aqueduct									
North San Joaquin Division	299	0	51	0	0	180,289	180,639	6,409	187,048
San Luis Division	8,321	2,147	0	0	0	145,687	156,155	10,346	166,501
South San Joaquin Division	840	80	3,598	2,093	0	285,702	292,313	16,708	309,021
Tehachapi Division	(490)	231	0	5,230	0	304,009	308,980	18,328	327,308
Mojave Division	911	444	744	0	0	326,840	328,939	37,946	366,885
Santa Ana Division	17,612	129	6,017	5,331	0	204,899	233,988	32,032	266,020
West Branch	36,295	0	522	37	0	473,027	509,881	33,946	543,827
Coastal Branch	192	0	93	0	0	480,598	480,883	0	480,883
Total, California Aqueduct	63,980	3,031	11,025	12,691	0	2,401,051	2,491,778	155,715	2,647,493
Total, Transportation Facilities	66,831	3,090	13,541	12,691	0	2,550,386	2,646,539	177,388	2,823,927
East Branch Enlargement	0	0	0	0	0	444,088	444,088	0	444,088
East Branch Extension	0	0	0	0	0	97,000	97,000	0	97,000
Coastal Branch Extension	0	0	0	0	0	32,680	32,680	0	32,680
San Joaquin Drainage Facilities	0	0	0	0	0	0	0	105,538	105,538
Off-Aqueduct Power Generation Facilities	0	0	0	0	0	485,310	485,310	0	485,310
Small Hydro Power Generation Facilities	0	0	0	0	14,095	77,632	91,727	0	91,727
Land Purchase - Kern Water Bank	0	0	0	0	34,686	0	34,686	0	34,686
Unassigned/Miscellaneous	0		0	0	0	0	0	1,577	1,577
Davis - Grunsky	0	0	0	0	0	0	0	130,000	130,000
Total through 2015	124,191	28,345	13,541	12,691	1,165,195	3,687,096	5,031,059	577,014	5,608,073

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 Pre-operation 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*
	1952-1997 (1)	*1998 (2)*	*1999 (3)*	*2000 (4)*	*2001 (5)*	*2002 (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	251,366	14,536	2,796	30,000	16,000	0	314,698
Alameda County Water District	232,484	0	0	1,000	1,000	0	234,484
Santa Clara Valley Water District	21,500	0	0	0	0	0	21,500
San Francisco Water Department (b	1,066,207	0	473	2,000	20,000	0	1,088,680
Subtotal	1,571,557	14,536	3,269	33,000	37,000	0	1,659,362
Central Coastal Area							
San Luis Obispo County Flood Control and Water Conservation District	9,192	17,012	0	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	17,012	0	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	302,683	1,858	0	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	2,760,373	36,022	34,856	57,000	33,000	0	2,921,251
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	3,486,008	37,880	34,856	57,000	33,000	0	3,648,744
Southern California Area							
Antelope Valley-East Kern Water Agency	384,750	10,333	5,580	7,000	0	0	407,663
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	25,298	0	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
Metropolitan Water District of Southern California	4,804,320	0	440	0	0	0	4,804,760
Mojave Water Agency	210,735	1,030	0	2,000	2,000	0	215,765
Palmdale Water District	34,173	0	0	0	0	0	34,173
San Bernardino Valley Municipal Water District	801,669	0	0	100,000	100,000	100,000	1,101,669
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
Ventura County Flood Control District	79,699	0	0	0	0	0	79,699
Subtotal	6,954,347	11,363	6,020	109,000	102,000	100,000	7,282,730
Total	12,944,995	80,791	44,145	199,000	172,000	100,000	13,540,931

a) Approximate only, not to be construed as invoice amounts.
b) Not an SWP water supply contractor.
c) Not an 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)	Annual Surplus Money Investment Fund Interest Rate (b 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: 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)	Reach Total (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													
									(1,532,433)				(10,104,646)	(11,637,079)
28J	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	1,648,431	1,015,971	686,821	6,638,979	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	493,550	537,881	145,706	71,959	1,249,096	275,939	32,387	99,251	40,270
1991	54	76,754	17,130	24,914	70,656	189,454	1,154,248	26,900	53,613	21,925
1992	42	56,576	6,525	18,370	37,841	119,312	402,526	53,036	61,799	51,407
1993	30	104,392	24,579	40,162	82,087	251,220	314,025	55,679	79,149	39,312
1994	14	68,138	13,463	27,139	45,963	154,703	(211,172)	29,017	362,585	36,368
1995	3	26,052	5,920	7,359	20,654	59,985	266,120	42,516	48,189	21,448
1996	0	14,856	3,334	6,643	14,654	39,487	140,057	13,049	25,751	10,693
1997	3	67,371	35,545	38,632	(13,491)	128,057	204,268	31,135	36,986	16,933
1998	7	15,419	6,392	6,802	10,402	39,015	68,041	6,120	14,731	4,618
1999	2	67,279	32,683	33,208	31,348	164,518	135,930	20,403	30,774	12,674
2000	0	0	0	0	0	0	385,545	0	0	0
2001	0	0	0	0	0	0	25,545	0	0	0
2002	0	0	0	0	0	0	25,545	0	0	0
2003	0	0	0	0	0	0	25,545	0	0	0
2004	0	0	0	0	0	0	22,593	0	0	0
2005	0	0	0	0	0	0	22,593	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	341,067	41,768,203	33,007,367	4,573,096	13,696,568	93,045,234	19,374,492	1,762,498	5,278,476	11,180,035

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	2,898,156	(128,051)	(56,448)	2,713,657
1989	2,641	3,878	4,755	14,489	221,320	6,898,872	346,589	173,993	7,419,454
1990	5,092	19,899	36,584	87,796	597,218	13,486,293	112,002	2,446,232	16,044,527
1991	1,942	5,059	7,357	31,682	1,302,726	13,928,401	133,121	114,981	14,176,503
1992	1,184	2,042	2,250	35,464	609,708	6,267,981	241,456	239,437	6,748,874
1993	3,618	6,028	8,873	42,200	548,884	2,549,510	257,330	200,072	3,006,912
1994	2,897	4,781	5,346	89,991	319,813	1,152,197	148,396	88,357	1,388,950
1995	11,556	3,635	14,769	24,750	432,983	1,466,674	217,940	131,995	1,816,609
1996	3,092	2,271	2,699	12,522	210,134	880,078	74,153	41,215	995,446
1997	1,454	4,141	3,655	20,589	319,161	2,074,023	146,851	84,303	2,305,177
1998	363	1,134	(6,005)	5,776	94,778	730,283	33,695	16,670	780,648
1999	1,051	2,265	10,864	28,589	242,550	2,147,703	73,655	77,658	2,299,016
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	22,593	173,083	0	0	173,083
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	562,625	3,879,328	4,915,669	8,995,986	55,949,109	114,536,461	42,410,841	23,341,570	180,288,872

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	13,349	16,603
1973	6,753	103,707	41,549	13,810	41,427	207,246	5,145	11,089	13,249
1974	6,618	117,165	55,978	16,199	71,796	267,756	5,434	24,433	16,567
1975	18,921	107,275	23,671	8,797	152,574	311,238	5,424	15,960	12,966
1976	17,485	79,554	13,041	5,138	41,687	156,905	19,931	76,280	62,164
1977	35,707	84,669	9,412	4,028	9,655	143,471	21,096	70,005	97,952
1978	8,539	428,395	7,006	3,536	6,994	454,470	7,584	40,453	17,395
1979	(35,394)	543,225	19,463	9,485	(242,253)	294,526	10,474	6,181	6,227
1980	66,622	3,450,695	191,307	75,209	185,384	3,969,217	2,158	17,492	17,706
1981	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	53,251	56,732	13,685	6,934	582,910	713,512	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	39,270	262,065	79,589	29,606	461,219	871,749	5,814	41,345	2,016,434
1991	4,916,134	409,871	98,847	35,860	511,519	5,972,231	4,588	43,140	41,348
1992	(757,001)	552,217	211,854	74,544	396,398	478,012	3,546	103,695	109,225
1993	110,233	730,676	186,271	70,815	720,283	1,818,278	15,016	101,634	90,929
1994	1,151,976	293,668	63,862	27,812	710,770	2,248,088	6,770	42,455	40,696
1995	285,776	445,340	130,761	58,640	1,914,186	2,834,703	12,548	49,963	43,251
1996	31,942	(105,409)	34,529	12,219	588,712	561,993	6,444	29,863	27,050
1997	73,224	522,078	(277,781)	42,881	5,016,215	5,376,617	11,497	49,111	43,799
1998	25,046	343,690	38,714	18,065	3,104,188	3,529,703	2,562	11,115	8,955
1999	33,223	276,495	106,583	39,874	2,401,130	2,857,305	4,271	20,407	17,524
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	21,073,625	31,174,367	22,189,817	5,902,326	65,347,240	145,687,375	850,157	12,968,624	11,033,350

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	706,272	529,080	3,704,065	15,112,041	1,223,457	1,134,395	9,523,012
1970	74,366	85,151	70,725	72,798	320,797	11,031,255	987,213	738,955	8,836,897
1971	15,595	45,006	43,988	42,624	339,078	2,925,191	193,255	36,514	3,275,227
1972	19,736	32,657	43,939	24,748	81,937	1,388,348	101,784	20,165	1,003,380
1973	14,283	16,448	9,980	16,320	25,090	680,834	19,584	13,469	798,805
1974	22,111	14,951	19,555	32,240	29,582	524,504	30,735	16,333	778,696
1975	15,865	13,479	10,793	13,678	25,827	269,197	25,164	21,048	370,265
1976	76,202	54,217	37,464	59,842	105,332	507,519	59,753	42,776	434,574
1977	75,628	52,919	22,826	54,444	81,293	301,515	49,972	30,152	235,514
1978	48,754	16,469	(2,816)	27,331	43,126	348,674	(653)	1,500	297,817
1979	241	6,906	13,401	14,229	25,411	293,786	9,846	7,856	245,590
1980	18,165	18,813	15,608	27,498	34,190	1,676,267	29,169	23,023	1,719,775
1981	10,309	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	115,983
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	34,841	29,230	27,269	49,082	34,048	716,119	44,187	14,537	441,145
1991	36,888	32,195	30,146	55,119	34,144	429,208	50,345	12,116	359,791
1992	103,321	99,765	98,178	192,455	97,638	994,856	185,311	9,210	390,990
1993	90,291	70,131	63,247	118,440	80,530	690,342	109,792	38,960	945,200
1994	65,737	29,221	26,997	50,234	35,154	403,367	44,481	17,426	327,880
1995	435,909	32,487	25,516	49,885	41,733	526,460	48,740	29,125	452,960
1996	253,433	19,489	15,020	30,202	29,333	405,663	26,945	16,405	256,254
1997	73,458	30,890	25,368	48,767	40,900	456,064	47,815	29,878	814,157
1998	14,618	7,107	5,773	10,697	9,676	289,018	10,799	6,819	119,925
1999	39,974	12,596	11,225	28,635	22,163	224,320	17,266	11,154	236,034
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	10,202,235	12,507,948	11,154,280	8,185,121	16,029,495	65,476,931	9,447,041	7,118,640	46,396,941

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	45,702,910	40,368,425	6,883,206	47,251,631	213,805	2,465,641	7,423	5,939,151
1970	13,890,751	36,322,845	35,446,706	6,786,231	42,232,937	2,211,077	1,210,665	6,217	3,652,478
1971	7,903,937	14,885,415	20,141,395	6,835,303	26,976,698	1,496,843	284,738	6,994	1,074,759
1972	3,025,555	5,783,019	10,002,935	34,791	10,037,726	129,417	409,903	3,620	471,963
1973	1,472,313	3,096,609	3,090,140	36,207	3,126,347	23,931	75,638	2,539	88,416
1974	1,031,843	2,546,984	4,798,348	152,494	4,950,842	28,399	205,581	2,703	138,673
1975	489,545	1,289,211	2,144,178	411,404	2,555,582	44,774	70,652	5,066	68,157
1976	618,049	2,154,103	1,124,357	174,629	1,298,986	121,043	84,593	6,786	59,967
1977	580,209	1,673,525	655,047	31,512	686,559	261,400	133,767	7,521	117,878
1978	582,775	1,428,409	1,900,843	27,956	1,928,799	553,014	57,150	5,872	51,615
1979	542,554	1,182,702	2,099,385	61,381	2,160,766	626,615	339,536	10,831	37,085
1980	3,772,498	7,372,362	17,433,610	6,046	17,439,656	1,130,429	1,073,430	3,604	308,188
1981	(2,527,211)	(4,566,440)	(3,848,206)	6,908	(3,841,298)	1,218,824	845,702	4,498	48,625
1982	(1,850,736)	(3,296,600)	11,370,112	6,054	11,376,166	6,968,683	746,900	3,920	33,869
1983	166,232	864,390	8,862,914	8,269	8,871,183	10,909,386	64,660	2,596	40,793
1984	119,387	613,799	3,227,937	31,701	3,259,638	8,340,371	309,491	3,124	17,505
1985	82,117	165,866	1,926,289	10,460	1,936,749	5,264,156	227,986	3,885	68,422
1986	186,348	675,895	1,381,955	33,788	1,415,743	2,049,111	2,069,663	4,261	2,331,707
1987	194,936	718,184	671,183	13,807	684,990	1,347,722	(6,453)	4,684	562,540
1988	262,334	(308,900)	1,408,760	(49,734)	1,359,026	847,954	(104,961)	13,409	(159,892)
1989	5,955,356	12,610,055	504,715	64,660	569,375	376,980	207,150	50,953	31,173
1990	642,759	4,096,810	791,973	25,218	817,191	202,065	(402,573)	61,192	(637,062)
1991	787,725	1,916,753	739,633	33,405	773,038	273,021	22,218	81,545	(188,732)
1992	738,918	3,127,108	768,160	24,369	792,529	620,962	384,568	86,644	225,398
1993	863,597	3,278,109	1,246,582	35,370	1,281,952	1,131,166	248,287	72,746	110,869
1994	859,777	1,950,195	829,006	16,681	845,687	998,126	164,096	60,147	51,340
1995	633,348	2,381,925	1,554,075	19,443	1,573,518	390,433	157,481	45,990	92,925
1996	393,841	1,509,942	2,591,460	10,797	2,602,257	91,593	69,281	22,188	35,656
1997	490,914	2,162,618	1,042,673	18,265	1,060,938	135,402	92,607	13,590	65,433
1998	441,545	938,609	928,398	6,843	935,241	47,486	36,170	4,164	29,900
1999	333,545	979,114	640,656	10,356	651,012	96,336	41,923	5,329	163,753
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	196,286	0	196,286	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	74,331,689	285,702,452	249,457,831	54,551,015	304,008,846	50,492,303	23,493,604	755,408	17,979,457

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)								
	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)
1952	892	5,788	35	2,013	2,074	2,413	21,386	3,334	5,599
1953	3,402	17,846	71	5,752	6,886	7,438	65,936	10,275	17,264
1954	4,548	23,558	369	8,560	7,849	9,820	87,036	13,566	22,790
1955	2,213	7,947	178	2,754	2,725	3,313	29,357	4,575	7,687
1956	2,655	8,542	216	2,905	2,961	3,561	31,562	4,917	8,264
1957	9,826	31,616	800	10,757	10,962	13,177	116,825	18,205	30,586
1958	16,752	53,569	1,397	18,717	18,578	22,627	199,237	31,001	52,019
1959	18,604	56,724	1,844	25,421	20,372	45,646	255,388	39,325	58,137
1960	37,179	43,893	11,029	136,751	17,152	109,816	449,110	65,655	93,700
1961	37,102	21,532	14,517	215,859	9,546	373,473	777,154	26,979	56,734
1962	10,730	8,197	4,186	164,168	4,336	279,421	817,994	9,964	36,235
1963	40,865	26,670	17,081	237,695	7,228	358,503	1,205,145	31,013	112,271
1964	71,116	33,912	22,793	262,996	6,863	244,003	1,495,651	69,669	202,642
1965	343,506	91,095	65,689	827,655	11,836	621,566	2,916,174	279,237	206,356
1966	1,311,628	160,388	178,538	1,746,245	31,078	1,018,628	6,629,975	415,066	364,004
1967	1,718,942	498,257	367,961	3,146,128	62,135	2,331,106	11,009,612	3,184,296	638,539
1968	2,291,691	1,141,929	1,145,768	4,588,850	102,207	2,600,293	21,078,184	8,264,126	1,268,194
1969	5,626,284	2,358,737	1,515,147	7,750,478	260,659	11,131,406	37,268,731	6,807,783	1,768,456
1970	5,304,372	3,232,911	2,081,810	23,451,612	1,240,798	16,885,193	59,277,133	2,169,051	7,229,429
1971	1,091,123	825,070	432,464	16,772,680	1,922,115	5,385,721	29,292,507	1,135,248	9,811,736
1972	635,507	484,772	324,865	3,788,894	48,049	788,479	7,085,469	1,095,740	5,528,987
1973	83,840	63,774	36,179	1,623,274	24,333	4,225,877	6,247,801	136,994	1,810,729
1974	118,639	103,545	54,198	5,699,605	130,567	766,562	7,248,472	68,180	1,922,999
1975	169,294	167,240	19,453	4,793,580	19,467	373,783	5,731,466	166,653	3,787,797
1976	102,909	44,896	24,732	3,103,916	84,188	204,705	3,837,735	475,176	1,494,750
1977	120,160	71,389	49,445	1,654,122	60,112	232,230	2,708,024	76,255	776,085
1978	68,838	32,855	18,183	677,448	36,484	210,198	1,711,657	57,463	131,076
1979	36,225	18,948	10,675	560,506	10,634	103,615	1,754,670	29,960	80,482
1980	284,545	133,526	121,171	2,239,224	60,229	559,963	5,914,309	31,462	181,638
1981	32,214	13,223	6,466	(774,614)	138,917	203,941	1,737,796	5,864	69,031
1982	77,988	13,158	14,459	432,274	346,905	79,819	8,717,975	9,224	159,280
1983	58,714	25,900	10,363	451,428	2,029,405	58,989	13,652,234	4,304	528,764
1984	35,378	845,423	6,052	(83,811)	1,290,740	34,764	10,799,037	3,850	270,455
1985	(232,549)	(481,017)	1,945,477	608,583	966,160	51,634	8,422,737	5,555	62,571
1986	(2,046,222)	(1,334,975)	3,260,280	1,097,122	230,510	51,994	7,713,451	9,927	114,561
1987	(344,829)	55,519	64,264	3,631,282	146,850	91,223	5,552,802	4,908	27,208
1988	(147,290)	(70,564)	351,489	552,546	558,557	197,761	2,039,009	7,358	161,957
1989	60,657	30,217	534,658	4,161,037	1,496,776	433,072	7,382,673	8,092	(2,297,399)
1990	(403,413)	(635,623)	(97,841)	8,795,108	1,394,698	344,367	8,620,918	176,854	(1,657,576)
1991	(18,809)	(147,369)	(17,234)	7,989,991	3,624,824	139,105	11,758,560	202,286	(1,316,160)
1992	338,098	(263,897)	75,210	4,852,101	8,364,426	127,829	14,811,339	333,934	(1,878,502)
1993	180,598	133,941	49,144	2,097,015	15,390,366	159,211	19,573,343	1,506,787	3,979,221
1994	114,273	65,260	26,546	935,234	8,082,401	81,869	10,579,292	2,104,588	2,493,097
1995	121,499	66,503	30,918	1,098,466	5,924,175	123,653	8,052,043	3,310,564	500,791
1996	48,699	44,953	17,787	1,738,669	2,181,669	96,339	4,346,834	19,019,751	(100,474)
1997	39,973	55,881	27,865	812,911	(342,563)	102,390	1,003,489	7,645,602	(662,524)
1998	27,626	20,285	12,816	273,413	3,392,776	36,135	3,880,771	993,619	1,613,505
1999	50,448	32,370	17,484	948,680	2,204,438	104,611	3,665,372	223,624	782,320
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	17,559,740	8,345,344	13,553,874	125,576,484	61,678,872	51,434,071	370,869,157	60,433,650	40,565,212

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)								
	Santa Ana Division (continued)				West Branch				
	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	4,247,037	3,768,699	1,120,231	8,244,651	5,844,024
1972	1,537,880	11,960,791	21,542,747	41,666,145	1,871,831	426,932	985,512	18,787,722	(23,015,734)
1973	209,664	247,769	3,673,344	6,078,500	775,824	168,064	399,856	9,408,706	1,821,206
1974	162,178	101,638	1,980,991	4,235,986	560,657	168,878	169,717	3,901,261	(3,454,239)
1975	157,365	124,399	1,626,274	5,862,488	353,670	421,176	925,693	664,113	609,891
1976	178,287	118,748	1,497,465	3,764,426	396,809	650,417	1,274,484	706,244	650,209
1977	127,106	89,036	323,091	1,391,573	390,637	3,018,637	2,152,961	196,012	1,135,148
1978	147,112	153,867	347,482	837,000	1,427,190	2,219,135	6,694,615	57,817	149,932
1979	29,723	19,225	225,947	385,337	940,013	2,168,382	19,813,742	597,858	331,313
1980	137,833	154,821	1,077,900	1,583,654	1,276,793	4,108,143	24,537,814	550,337	204,751
1981	28,815	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	151,493	142,244	25,386	2,126,670	102,366	21,971
1986	31,564	25,037	86,794	267,883	133,914	62,294	274,660	141,894	36,149
1987	17,141	8,005	45,528	102,790	13,936	453,949	711,773	192,511	27,931
1988	41,892	21,113	90,784	323,104	427,544	118,010	1,660,959	203,130	95,930
1989	28,708	12,619	51,556	(2,196,424)	207,067	430,662	584,186	241,811	97,472
1990	27,478	12,817	55,408	(1,385,019)	198,131	355,480	386,882	813,211	54,269
1991	142,139	15,524	62,794	(893,417)	223,183	344,386	453,336	1,132,520	55,176
1992	34,185	13,422	69,479	(1,427,482)	543,129	295,312	464,421	4,402,524	47,182
1993	44,300	27,047	162,854	5,720,209	466,850	320,182	643,189	3,361,457	74,198
1994	16,351	11,673	54,581	4,680,290	205,498	231,527	362,717	306,148	33,758
1995	35,402	28,202	164,254	4,039,213	345,610	392,647	536,253	468,656	34,007
1996	76,723	73,629	344,747	19,414,376	152,542	161,394	427,223	203,201	15,357
1997	50,662	20,720	268,293	7,322,753	300,687	71,310	432,940	276,180	50,095
1998	10,268	8,970	479,138	3,105,500	347,200	21,003	2,028,979	181,951	49,377
1999	78,777	41,411	307,790	1,433,922	263,207	32,026	1,042,413	112,086	48,055
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	24,256,786	23,680,621	55,962,723	204,898,992	37,110,890	31,974,803	128,942,302	63,185,143	75,127,538

a) Includes excess capacity costs (not shown in Table B-9) allocated to MWD 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)									Grand Total (74)
	West Branch (continued)		Coastal Branch						Total (73)	
	Reach 30 (65)	Subtotal (66)	Reach 31A (67)	Reach 33A (68)	Reach 33B (69)	Reach 34 (70)	Reach 35 (71)	Subtotal (72)		
1952	1,408	5,655	0	0	0	0	0	0	98,857	99,353
1953	4,346	17,457	0	0	0	0	0	0	309,387	311,812
1954	5,743	23,074	0	0	0	0	0	0	394,688	402,143
1955	1,943	7,809	0	0	0	0	0	0	159,842	169,342
1956	2,077	8,348	0	0	0	0	0	0	255,679	351,551
1957	7,684	30,877	0	0	0	0	0	0	708,753	1,464,452
1958	13,931	55,142	0	0	0	0	0	0	1,331,616	2,286,623
1959	44,384	134,727	28,046	49,114	0	7,441	8,236	92,837	2,096,392	2,967,412
1960	84,703	255,409	34,404	70,450	0	8,507	14,265	127,626	2,937,049	4,660,833
1961	123,330	239,953	13,801	17,868	0	1,501	3,931	37,101	4,650,264	8,545,244
1962	348,366	671,447	10,121	7,798	0	524	1,689	20,132	5,827,774	8,875,171
1963	521,491	1,167,566	20,470	14,299	0	880	2,943	38,592	18,981,487	24,610,278
1964	1,372,464	2,232,275	315,418	26,963	0	1,687	5,639	349,707	31,550,813	41,736,060
1965	3,383,950	4,943,858	747,023	36,178	0	2,118	7,060	792,379	57,936,405	62,664,743
1966	9,364,753	14,872,117	2,258,915	35,864	0	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	0	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	0	1,324	4,369	2,744,057	192,593,079	197,978,911
1969	16,228,175	34,690,908	423,797	26,549	0	907	2,905	454,158	182,530,023	184,473,490
1970	22,330,328	50,497,652	269,194	24,368	0	851	2,787	297,200	206,720,774	207,082,650
1971	16,890,503	40,115,145	164,446	32,230	0	1,315	3,804	201,795	158,414,033	158,624,739
1972	3,818,001	2,874,264	131,332	17,601	0	522	1,660	151,115	68,228,670	68,362,291
1973	13,426,222	25,999,878	182,493	16,154	0	542	1,758	200,947	45,110,823	45,263,853
1974	2,988,318	4,334,592	190,866	18,799	0	463	1,405	211,533	24,036,199	24,402,166
1975	1,808,235	4,782,778	64,582	36,012	0	2,255	6,656	109,505	21,065,768	21,318,838
1976	1,253,067	4,931,230	198,266	68,898	0	5,088	14,988	287,240	17,183,961	17,492,910
1977	345,023	7,238,418	918,473	81,305	0	1,834	5,387	1,006,999	15,165,801	15,544,382
1978	763,445	11,312,134	52,994	83,300	0	1,302	3,852	141,448	18,661,117	19,119,151
1979	282,145	24,133,453	38,182	108,951	0	1,505	4,433	153,071	31,202,118	31,857,362
1980	2,055,206	32,733,044	189,070	376,036	0	1,152	3,449	569,707	73,891,101	74,986,833
1981	275,460	22,193,909	19,897	(157,537)	0	1,427	4,261	(131,952)	15,246,649	15,742,773
1982	351,376	18,460,292	(16,381)	(96,449)	0	588	1,787	(110,455)	38,256,580	39,705,931
1983	566,545	7,843,883	85,496	67,106	0	794	2,398	155,794	34,705,281	38,044,649
1984	1,118,954	4,483,129	28,568	54,074	0	986	2,959	86,587	24,454,091	30,382,250
1985	284,243	2,702,880	36,834	54,314	0	2,111	6,263	99,522	14,914,930	28,537,556
1986	213,353	862,264	82,358	223,134	0	17,458	51,279	374,229	13,435,351	43,155,828
1987	158,313	1,558,413	53,817	1,061,939	0	92,506	272,968	1,481,230	11,711,428	34,331,982
1988	222,068	2,727,641	183,853	1,141,272	0	99,456	293,612	1,718,193	11,026,370	18,123,243
1989	148,674	1,709,872	84,678	893,765	0	77,283	228,038	1,283,764	30,302,112	33,130,497
1990	119,438	1,927,411	133,985	1,100,385	0	103,785	277,889	1,616,044	32,609,631	34,456,008
1991	229,315	2,437,916	165,254	1,636,480	0	123,603	363,889	2,289,226	38,430,810	39,923,044
1992	206,495	5,959,063	183,590	1,206,249	1,383,514	729,571	369,840	3,872,764	34,362,207	35,091,269
1993	296,349	5,162,225	345,238	4,148,773	4,758,457	2,509,286	1,272,026	13,033,780	52,874,808	53,674,942
1994	168,426	1,308,074	282,455	16,056,502	18,416,092	9,711,392	4,922,973	49,389,414	72,389,990	72,864,520
1995	304,983	2,082,156	1,196,535	50,941,358	58,427,464	30,810,664	15,618,776	156,994,797	179,774,964	180,267,935
1996	98,522	1,058,239	949,004	47,020,134	53,929,996	28,439,006	14,416,517	144,754,657	175,243,744	175,493,365
1997	233,956	1,365,168	563,031	12,870,304	14,761,664	7,784,296	3,946,074	39,925,369	60,522,129	60,969,350
1998	67,874	2,696,384	248,709	3,336,611	3,826,944	2,018,070	1,023,015	10,453,349	26,320,205	26,454,005
1999	99,385	1,597,172	263,764	4,895,038	5,614,390	2,960,647	1,500,834	15,234,673	28,717,586	29,124,656
2000	698,291	5,781,908	23,000	13,200,000	0	0	0	13,223,000	36,787,877	37,173,422
2001	0	16,502	20,000	2,000,000	0	0	0	2,020,000	10,976,490	11,002,035
2002	0	0	20,000	0	0	0	0	20,000	437,632	463,177
2003	0	0	20,000	0	0	0	0	20,000	437,632	463,177
2004	0	0	20,000	0	0	0	0	20,000	389,369	411,962
2005	0	0	20,000	0	0	0	0	20,000	389,369	411,962
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	136,686,779	473,027,455	20,283,577	162,871,304	161,118,521	85,528,274	44,688,591	474,490,267	2,438,973,416	2,588,308,826

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	50,289
1979	3,235	0	0	0	73,852	73,852	650,826	76,849	212,826	91,380
1980	416	0	0	0	81,769	81,769	1,128,840	212,974	242,118	110,786
1981	3,847	0	0	0	101,340	101,340	884,763	130,126	167,118	204,772
1982	11,075	0	0	0	191,987	191,987	1,156,605	141,718	249,447	96,020
1983	1,928	0	0	0	80,215	80,215	1,258,144	84,360	373,875	152,255
1984	3,765	0	0	0	139,121	139,121	1,998,984	113,797	340,344	34,461
1985	2,888	0	0	0	259,515	259,515	2,044,121	207,478	427,930	247,308
1986	2,787	0	0	0	229,508	229,508	1,834,838	285,908	305,149	159,054
1987	2,388	0	0	0	310,683	310,683	2,118,974	163,714	400,547	283,067
1988	545	0	(94)	0	330,156	330,062	2,068,655	186,275	299,934	370,212
1989	1,800	473,408	178,069	237,480	373,427	1,262,384	2,164,688	163,481	320,734	497,038
1990	788	556,610	244,897	123,144	427,257	1,351,908	2,233,036	251,434	355,022	571,415
1991	3,654	651,307	302,327	205,516	428,470	1,587,620	1,806,699	152,509	95,745	93,986
1992	647	443,912	189,330	265,462	280,505	1,179,209	2,064,907	405,932	409,435	363,964
1993	3,630	435,240	294,416	213,267	289,206	1,232,129	3,925,050	621,712	480,832	399,558
1994	2,279	430,117	198,322	206,594	365,646	1,200,679	4,673,275	302,115	404,705	407,980
1995	2,906	428,313	282,898	151,703	295,326	1,158,240	3,849,620	316,905	566,447	330,706
1996	8,007	796,526	272,743	240,106	260,001	1,569,376	3,526,989	254,075	664,485	493,300
1997	7,449	504,476	210,763	213,211	315,374	1,243,824	3,010,809	189,269	591,540	230,371
1998	798	405,030	227,564	204,964	251,183	1,088,741	2,965,468	426,872	532,033	303,322
1999	415	641,228	315,626	306,020	265,576	1,528,450	3,585,040	458,157	409,090	372,063
2000	3,888	1,110,654	251,014	442,438	381,082	2,185,188	4,212,594	451,642	724,992	630,709
2001	4,205	930,093	258,776	464,924	391,843	2,045,636	4,392,155	479,948	774,966	677,736
2002	4,415	964,103	269,309	481,516	405,397	2,120,325	4,264,352	499,060	805,345	711,402
2003	4,524	964,953	269,313	481,959	405,625	2,121,850	4,265,082	499,129	805,534	712,365
2004	4,524	941,346	262,271	470,317	396,334	2,070,268	4,161,849	486,106	784,585	678,379
2005	4,524	940,890	262,269	470,080	396,213	2,069,452	4,161,456	486,070	784,482	677,858
2006	4,524	939,902	262,264	469,562	395,946	2,067,674	4,160,607	485,991	784,259	676,724
2007	4,524	940,117	262,265	469,674	396,003	2,068,059	4,160,791	486,007	784,306	676,969
2008	4,524	940,255	262,266	469,746	396,040	2,068,307	4,160,909	486,018	784,338	677,129
2009	4,524	940,403	262,267	469,823	396,080	2,068,573	4,161,036	486,030	784,371	677,298
2010	4,524	940,020	262,265	469,623	395,978	2,067,886	4,160,707	485,999	784,285	676,859
2011	4,524	943,989	263,254	471,600	397,467	2,076,310	4,175,839	487,876	787,363	682,390
2012	4,524	944,104	263,254	471,661	397,499	2,076,518	4,175,940	487,885	787,391	682,525
2013	4,524	944,889	263,258	472,071	397,712	2,077,930	4,176,613	487,947	787,567	683,423
2014	4,524	946,109	263,265	472,709	398,040	2,080,123	4,177,662	488,047	787,843	684,820
2015	4,524	946,071	263,265	472,689	398,030	2,080,055	4,177,629	488,044	787,834	684,778
2016	4,524	945,775	263,263	472,533	397,950	2,079,521	4,177,373	488,019	787,767	684,437
2017	4,524	945,968	263,265	472,635	398,002	2,079,870	4,177,540	488,036	787,811	684,658
2018	4,524	946,889	263,269	473,117	398,252	2,081,527	4,178,332	488,109	788,019	685,713
2019	4,524	946,333	263,267	472,825	398,102	2,080,527	4,177,854	488,065	787,893	685,075
2020	4,524	946,112	263,266	472,710	398,042	2,080,130	4,177,664	488,047	787,843	684,823
2021	4,524	945,709	263,264	472,499	397,934	2,079,406	4,177,316	488,014	787,752	684,360
2022	4,524	946,793	263,270	473,066	398,226	2,081,355	4,178,248	488,101	787,997	685,601
2023	4,524	945,699	263,264	472,493	397,931	2,079,387	4,177,306	488,013	787,750	684,348
2024	4,524	946,243	263,267	472,778	398,077	2,080,365	4,177,776	488,058	787,873	684,971
2025	4,524	946,101	263,266	472,704	398,039	2,080,110	4,177,653	488,046	787,840	684,808
2026	4,524	946,322	263,267	472,819	398,100	2,080,508	4,177,844	488,063	787,890	685,062
2027	4,524	945,995	263,265	472,649	398,012	2,079,921	4,177,562	488,038	787,817	684,687
2028	4,524	946,544	263,268	472,936	398,160	2,080,908	4,178,034	488,081	787,940	685,318
2029	4,524	945,927	263,265	472,612	397,992	2,079,796	4,177,504	488,032	787,801	684,610
2030	4,524	945,637	263,264	472,461	397,914	2,079,276	4,177,255	488,008	787,736	684,278
2031	4,524	946,710	263,269	473,022	398,205	2,081,206	4,178,178	488,095	787,978	685,508
2032	4,524	946,607	263,268	472,969	398,177	2,081,021	4,178,089	488,086	787,955	685,390
2033	4,524	945,514	263,263	472,397	397,882	2,079,056	4,177,149	487,998	787,709	684,136
2034	4,524	946,202	263,267	472,756	398,065	2,080,290	4,177,740	488,054	787,863	684,925
2035	4,524	946,564	263,268	472,946	398,165	2,080,943	4,178,051	488,084	787,946	685,341
Total	229,424	39,967,709	12,182,761	19,342,786	20,228,686	91,721,942	206,204,474	23,377,672	37,326,271	30,984,643

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	1,137,690	1,860,456	306,503	188,214	2,355,173
1979	1,269	29,294	7,351	106,835	1,176,630	1,848,109	231,339	145,205	2,224,653
1980	3,621	24,270	17,404	110,852	1,850,865	2,365,292	472,660	247,608	3,085,560
1981	4,038	20,109	17,586	98,143	1,526,655	2,649,730	435,226	154,191	3,239,147
1982	2,236	22,870	21,919	202,590	1,893,405	3,192,710	599,793	244,664	4,037,167
1983	(2,047)	48,781	45,573	216,434	2,177,375	4,244,937	802,908	273,081	5,320,926
1984	4,449	44,017	23,563	455,054	3,014,669	4,373,157	808,917	290,728	5,472,802
1985	13,097	74,565	57,920	238,067	3,310,486	4,717,323	629,825	189,199	5,536,347
1986	11,614	31,084	46,864	363,350	3,037,861	5,217,491	929,919	359,365	6,506,775
1987	15,273	25,182	37,949	416,375	3,461,081	5,292,200	958,927	362,065	6,613,192
1988	30,207	41,047	49,156	335,408	3,380,894	5,329,317	822,300	360,336	6,511,953
1989	9,740	54,881	114,203	179,323	3,504,088	5,753,966	851,745	907,609	7,513,320
1990	31,161	69,416	119,309	247,781	3,878,574	6,788,986	1,066,314	883,822	8,739,122
1991	22,434	(18,690)	99,577	262,052	2,514,312	6,796,247	1,067,078	585,008	8,448,333
1992	26,787	332,012	98,670	186,640	3,888,347	9,415,121	1,419,603	673,833	11,508,557
1993	24,845	181,592	94,169	316,045	6,043,803	10,274,070	1,371,074	900,996	12,546,140
1994	28,383	90,791	80,963	416,061	6,404,273	8,451,193	1,325,416	802,190	10,578,799
1995	29,298	64,012	80,278	373,657	5,610,923	10,406,784	2,386,507	959,685	13,752,976
1996	(1,020)	60,610	11,672	312,097	5,322,208	10,246,985	2,604,651	628,177	13,479,813
1997	18,428	95,321	15,691	335,566	4,486,995	10,429,338	1,098,381	2,084,859	13,612,578
1998	26,323	54,255	611,289	658,090	5,577,652	11,410,435	1,449,378	5,364,351	18,224,164
1999	47,954	30,870	418,823	2,015,677	7,337,674	9,963,407	1,388,401	1,309,757	12,661,565
2000	85,147	78,672	96,166	469,960	6,749,882	12,286,356	2,643,749	1,027,233	15,957,338
2001	90,996	84,305	102,549	503,186	7,105,841	11,864,521	2,786,394	1,026,485	15,677,400
2002	94,674	87,750	106,646	523,328	7,092,557	12,044,875	2,300,030	764,461	15,109,366
2003	94,674	87,750	106,646	523,328	7,094,508	12,048,564	2,301,937	765,043	15,115,544
2004	92,209	85,445	103,861	509,658	6,902,092	11,779,251	2,245,930	748,524	14,773,705
2005	92,209	85,445	103,861	509,658	6,901,039	11,777,272	2,244,913	748,212	14,770,397
2006	92,209	85,445	103,861	509,658	6,898,754	11,772,977	2,242,709	747,538	14,763,224
2007	92,209	85,445	103,861	509,658	6,899,246	11,773,908	2,243,181	747,683	14,764,772
2008	92,209	85,445	103,861	509,658	6,899,567	11,774,511	2,243,494	747,778	14,765,783
2009	92,209	85,445	103,861	509,658	6,899,908	11,775,150	2,243,822	747,879	14,766,851
2010	92,209	85,445	103,861	509,658	6,899,023	11,773,488	2,242,966	747,617	14,764,071
2011	92,554	85,768	104,252	511,572	6,927,614	11,814,982	2,252,250	750,369	14,817,601
2012	92,554	85,768	104,252	511,572	6,927,887	11,815,484	2,252,509	750,449	14,818,442
2013	92,554	85,768	104,252	511,572	6,929,696	11,818,891	2,254,259	750,984	14,824,134
2014	92,554	85,768	104,252	511,572	6,932,518	11,824,188	2,256,983	751,817	14,832,988
2015	92,554	85,768	104,252	511,572	6,932,431	11,824,027	2,256,904	751,793	14,832,724
2016	92,554	85,768	104,252	511,572	6,931,742	11,822,734	2,256,235	751,587	14,830,556
2017	92,554	85,768	104,252	511,572	6,932,191	11,823,573	2,256,668	751,720	14,831,961
2018	92,554	85,768	104,252	511,572	6,934,319	11,827,572	2,258,725	752,349	14,838,646
2019	92,554	85,768	104,252	511,572	6,933,033	11,825,158	2,257,482	751,969	14,834,609
2020	92,554	85,768	104,252	511,572	6,932,523	11,824,195	2,256,989	751,817	14,833,001
2021	92,554	85,768	104,252	511,572	6,931,588	11,822,444	2,256,083	751,542	14,830,069
2022	92,554	85,768	104,252	511,572	6,934,093	11,827,148	2,258,506	752,283	14,837,937
2023	92,554	85,768	104,252	511,572	6,931,563	11,822,396	2,256,062	751,534	14,829,992
2024	92,554	85,768	104,252	511,572	6,932,824	11,824,764	2,257,280	751,907	14,833,951
2025	92,554	85,768	104,252	511,572	6,932,493	11,824,141	2,256,958	751,809	14,832,908
2026	92,554	85,768	104,252	511,572	6,933,005	11,825,109	2,257,454	751,961	14,834,524
2027	92,554	85,768	104,252	511,572	6,932,250	11,823,687	2,256,729	751,739	14,832,155
2028	92,554	85,768	104,252	511,572	6,933,519	11,826,074	2,257,954	752,113	14,836,141
2029	92,554	85,768	104,252	511,572	6,932,093	11,823,392	2,256,570	751,690	14,831,652
2030	92,554	85,768	104,252	511,572	6,931,423	11,822,134	2,255,925	751,494	14,829,553
2031	92,554	85,768	104,252	511,572	6,933,905	11,826,795	2,258,326	752,227	14,837,348
2032	92,554	85,768	104,252	511,572	6,933,666	11,826,347	2,258,094	752,156	14,836,597
2033	92,554	85,768	104,252	511,572	6,931,138	11,821,598	2,255,647	751,409	14,828,654
2034	92,554	85,768	104,252	511,572	6,932,728	11,824,583	2,257,185	751,879	14,833,647
2035	92,554	85,768	104,252	511,572	6,933,568	11,826,161	2,257,998	752,126	14,836,285
Total	3,740,044	4,567,441	5,939,528	26,882,315	339,022,388	579,694,374	107,921,276	47,261,187	734,876,837

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	460,907	184,467	35,696	235,322	1,006,425	22,013	134,760	86,103
1970	89,547	484,300	226,002	66,070	192,582	1,058,501	26,207	156,981	128,273
1971	99,917	541,574	175,592	64,193	158,170	1,039,446	32,312	190,753	118,372
1972	116,708	647,979	174,519	73,670	154,783	1,167,659	35,031	187,242	130,396
1973	116,791	611,705	158,145	58,344	153,955	1,098,940	51,150	225,747	127,530
1974	120,309	671,455	150,835	63,905	150,230	1,156,734	34,752	199,127	131,298
1975	133,593	839,285	178,974	81,478	157,586	1,390,916	78,523	250,377	159,006
1976	54,938	883,956	220,832	90,305	174,835	1,424,866	39,348	133,933	123,424
1977	73,331	1,114,465	270,734	98,132	196,311	1,752,973	38,086	121,348	178,078
1978	45,867	898,992	203,261	106,938	203,079	1,458,137	45,552	178,805	129,928
1979	223,973	842,508	144,055	99,670	180,734	1,490,940	69,973	150,679	129,756
1980	243,507	1,176,463	222,942	127,625	281,860	2,052,397	57,726	274,848	185,155
1981	265,766	1,065,358	193,048	90,533	1,612,157	3,226,862	80,121	198,256	144,187
1982	279,250	1,241,285	209,371	114,421	1,433,180	3,277,507	59,424	269,086	233,494
1983	214,468	1,949,017	339,809	131,377	2,143,678	4,778,349	49,448	383,476	223,078
1984	241,273	2,233,969	335,166	163,858	2,111,386	5,085,652	42,062	458,489	300,924
1985	322,068	2,882,583	360,431	176,577	1,603,532	5,345,191	58,820	495,500	213,368
1986	416,027	2,996,792	472,551	252,188	601,250	4,738,808	90,730	478,786	596,800
1987	362,738	3,104,592	424,107	236,349	439,232	4,567,018	113,962	412,042	446,067
1988	365,209	2,954,186	456,864	231,754	639,242	4,647,255	96,728	379,073	417,991
1989	263,171	3,182,472	393,589	332,986	633,419	4,805,637	83,282	389,698	400,853
1990	397,353	4,011,110	579,073	464,639	729,132	6,181,307	111,019	436,849	515,611
1991	256,473	4,388,184	543,760	728,156	765,765	6,682,338	104,414	496,794	465,940
1992	302,021	3,792,401	795,587	363,134	815,590	6,068,733	118,315	511,982	417,871
1993	439,725	4,337,616	1,008,394	551,849	734,796	7,072,380	230,338	745,885	490,159
1994	284,348	4,376,288	815,858	396,671	492,730	6,365,895	125,396	602,275	572,430
1995	107,995	5,026,076	1,066,971	440,006	1,356,668	7,997,716	185,681	657,282	432,072
1996	1,003,229	4,738,221	931,944	683,323	1,034,376	8,391,093	112,062	416,294	472,350
1997	859,665	5,761,996	924,289	254,934	646,209	8,447,093	128,190	449,316	728,436
1998	690,845	5,522,567	1,242,589	534,931	654,538	8,645,470	115,748	457,845	429,433
1999	670,730	5,337,911	1,178,403	494,888	619,806	8,301,738	99,794	381,603	389,402
2000	1,108,735	5,539,311	1,180,036	422,444	578,101	8,828,627	255,282	973,075	799,220
2001	1,129,973	5,638,945	1,155,024	468,095	639,082	9,031,119	274,068	1,043,710	856,461
2002	900,520	4,821,177	1,038,363	488,928	667,701	7,916,689	285,067	1,083,281	888,449
2003	902,539	4,829,071	1,038,363	489,581	668,524	7,928,078	285,089	1,084,357	889,456
2004	841,639	4,652,845	994,005	469,107	640,526	7,598,122	277,646	1,056,538	866,717
2005	840,561	4,648,621	994,005	468,757	640,088	7,592,032	277,634	1,055,965	866,180
2006	838,224	4,639,439	994,005	468,002	639,134	7,578,804	277,609	1,054,717	865,013
2007	838,723	4,641,424	994,005	468,165	639,339	7,581,656	277,615	1,054,986	865,264
2008	839,056	4,642,717	994,005	468,270	639,475	7,583,523	277,618	1,055,162	865,430
2009	839,403	4,644,082	994,005	468,385	639,617	7,585,492	277,622	1,055,347	865,603
2010	838,497	4,640,527	994,005	468,090	639,247	7,580,366	277,612	1,054,864	865,150
2011	847,545	4,668,839	999,486	471,115	643,327	7,630,312	278,670	1,059,574	869,097
2012	847,823	4,669,914	999,486	471,204	643,440	7,631,867	278,673	1,059,720	869,234
2013	849,675	4,677,199	999,486	471,805	644,197	7,642,362	278,692	1,060,710	870,160
2014	852,565	4,688,523	999,486	472,737	645,376	7,658,687	278,724	1,062,249	871,601
2015	852,481	4,688,177	999,486	472,710	645,340	7,658,194	278,723	1,062,203	871,558
2016	851,770	4,685,412	999,486	472,481	645,052	7,654,201	278,714	1,061,826	871,204
2017	852,230	4,687,210	999,486	472,629	645,239	7,656,794	278,720	1,062,071	871,434
2018	854,410	4,695,762	999,486	473,333	646,129	7,669,120	278,743	1,063,232	872,522
2019	853,092	4,690,594	999,486	472,907	645,590	7,661,669	278,730	1,062,530	871,866
2020	852,570	4,688,538	999,486	472,739	645,378	7,658,711	278,724	1,062,252	871,603
2021	851,610	4,684,790	999,486	472,429	644,987	7,653,302	278,713	1,061,742	871,125
2022	854,176	4,694,852	999,486	473,259	646,034	7,667,807	278,740	1,063,109	872,406
2023	851,588	4,684,692	999,486	472,421	644,977	7,653,164	278,713	1,061,729	871,114
2024	852,879	4,689,754	999,486	472,839	645,503	7,660,461	278,727	1,062,416	871,759
2025	852,537	4,688,424	999,486	472,729	645,364	7,658,540	278,724	1,062,235	871,588
2026	853,064	4,690,488	999,486	472,899	645,580	7,661,517	278,729	1,062,515	871,851
2027	852,294	4,687,454	999,486	472,651	645,264	7,657,149	278,721	1,062,104	871,465
2028	853,592	4,692,554	999,486	473,070	645,795	7,664,497	278,735	1,062,797	872,115
2029	852,127	4,686,818	999,486	472,597	645,197	7,656,225	278,720	1,062,016	871,383
2030	851,441	4,684,126	999,486	472,375	644,918	7,652,346	278,711	1,061,652	871,041
2031	853,987	4,694,095	999,486	473,197	645,956	7,666,721	278,738	1,063,006	872,311
2032	853,741	4,693,137	999,486	473,118	645,856	7,665,338	278,736	1,062,876	872,188
2033	851,148	4,682,982	999,486	472,279	644,798	7,650,693	278,708	1,061,496	870,895
2034	852,779	4,689,365	999,486	472,806	645,463	7,659,899	278,726	1,062,364	871,708
2035	853,638	4,692,739	999,486	473,084	645,814	7,664,761	278,735	1,062,822	872,137
Total	40,493,538	249,019,118	51,069,238	24,616,428	44,571,574	409,769,896	12,547,058	48,948,379	40,796,093

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	83,706	59,077	0	0	0	0	0	0	0
1970	118,046	85,758	94,171	123,374	152,424	0	0	0	0
1971	129,811	80,282	95,075	91,389	167,142	691,791	151,979	111,623	529,723
1972	117,625	84,287	98,647	115,592	146,096	877,535	124,831	101,479	609,058
1973	117,706	92,257	74,238	114,843	221,385	961,855	120,106	99,429	692,748
1974	141,658	98,103	74,914	193,523	141,540	898,272	143,866	115,649	853,098
1975	207,908	124,105	61,799	117,194	108,154	1,156,757	180,614	119,889	988,045
1976	139,134	69,715	33,655	147,908	134,063	1,124,051	177,086	114,133	1,037,799
1977	194,086	108,644	91,547	175,039	137,975	1,397,006	203,837	119,467	1,339,196
1978	168,634	106,702	72,585	170,578	151,120	1,254,043	139,662	132,224	1,265,813
1979	175,107	85,942	56,331	174,147	150,029	1,490,461	201,935	260,981	1,216,126
1980	284,207	120,896	123,120	167,249	164,749	1,988,619	189,132	238,607	1,437,614
1981	199,927	76,965	33,322	113,202	171,669	1,741,488	163,934	161,182	1,799,832
1982	264,947	158,178	142,631	224,170	224,051	1,793,867	195,086	15,768	1,933,859
1983	308,801	136,350	124,724	203,733	217,324	2,421,794	199,708	181,879	2,550,842
1984	396,448	163,331	108,212	188,724	245,764	3,312,127	329,490	204,332	3,215,901
1985	298,337	198,368	154,995	194,327	360,308	3,463,178	237,127	180,068	3,427,049
1986	422,493	248,170	242,660	346,410	349,369	3,781,427	320,984	360,156	3,574,451
1987	488,226	334,059	325,697	469,378	322,824	3,731,912	463,757	238,813	4,080,465
1988	532,489	290,881	220,658	374,653	318,253	3,451,893	411,110	313,806	3,746,920
1989	733,030	268,025	207,487	595,433	380,883	3,512,884	333,996	220,978	3,751,081
1990	651,465	363,652	225,171	480,738	677,729	4,021,727	439,953	212,851	4,381,643
1991	716,328	328,683	269,873	371,312	433,313	4,309,082	424,704	273,169	4,566,702
1992	574,145	334,579	270,768	409,314	423,717	4,734,368	729,211	571,412	4,270,793
1993	723,450	413,722	278,375	496,851	594,201	5,182,830	664,063	423,780	5,266,124
1994	703,360	346,521	239,755	482,219	445,771	4,012,431	414,731	254,263	3,727,961
1995	881,902	405,045	242,253	622,654	507,102	4,607,154	309,283	315,905	3,973,757
1996	984,784	367,570	238,622	519,560	604,736	4,892,967	214,773	187,784	4,331,630
1997	1,864,113	309,696	254,080	516,115	429,771	5,094,202	261,221	275,610	4,011,366
1998	1,011,284	295,927	170,556	384,226	484,072	4,753,508	309,440	248,178	4,695,541
1999	1,098,134	358,757	164,767	378,630	466,399	4,565,364	321,394	215,989	4,319,149
2000	1,384,255	657,990	552,985	860,198	900,598	6,147,966	1,153,065	525,517	5,575,400
2001	868,499	651,500	592,647	920,268	967,775	6,373,009	1,230,271	564,541	5,783,111
2002	903,291	676,213	614,253	955,778	1,004,641	6,192,449	847,910	585,742	5,898,975
2003	903,291	676,808	615,219	956,399	1,005,520	6,196,313	848,931	586,491	5,901,224
2004	879,717	659,429	599,612	931,733	979,669	6,056,902	827,252	571,517	5,768,113
2005	879,717	659,112	599,097	931,401	979,199	6,054,834	826,705	571,118	5,766,913
2006	879,717	658,422	597,979	930,680	978,179	6,050,340	825,518	570,247	5,764,295
2007	879,717	658,569	598,219	930,835	978,399	6,051,310	825,774	570,436	5,764,862
2008	879,717	658,667	598,378	930,939	978,543	6,051,944	825,942	570,557	5,765,231
2009	879,717	658,770	598,543	931,046	978,695	6,052,613	826,119	570,688	5,765,618
2010	879,717	658,504	598,112	930,766	978,299	6,050,873	825,659	570,353	5,764,606
2011	883,018	661,388	601,025	934,690	982,587	6,073,907	829,470	573,014	5,785,551
2012	883,018	661,471	601,157	934,776	982,706	6,074,436	829,610	573,115	5,785,856
2013	883,018	662,019	602,044	935,348	983,516	6,078,000	830,552	573,807	5,787,934
2014	883,018	662,870	603,426	936,238	984,777	6,083,542	832,018	574,880	5,791,157
2015	883,018	662,845	603,383	936,212	984,738	6,083,374	831,975	574,846	5,791,060
2016	883,018	662,636	603,046	935,992	984,430	6,082,019	831,614	574,584	5,790,273
2017	883,018	662,772	603,266	936,135	984,630	6,082,901	831,849	574,753	5,790,785
2018	883,018	663,416	604,307	936,807	985,582	6,087,084	832,957	575,563	5,793,219
2019	883,018	663,026	603,676	936,401	985,006	6,084,556	832,287	575,075	5,791,750
2020	883,018	662,872	603,428	936,239	984,779	6,083,550	832,022	574,881	5,791,162
2021	883,018	662,589	602,969	935,945	984,360	6,081,715	831,536	574,525	5,790,096
2022	883,018	663,347	604,197	936,736	985,481	6,086,639	832,837	575,479	5,792,963
2023	883,018	662,582	602,959	935,937	984,350	6,081,667	831,524	574,515	5,790,068
2024	883,018	662,963	603,576	936,335	984,914	6,084,145	832,179	574,995	5,791,509
2025	883,018	662,863	603,413	936,229	984,765	6,083,494	832,006	574,870	5,791,132
2026	883,018	663,019	603,664	936,392	984,995	6,084,503	832,274	575,064	5,791,718
2027	883,018	662,791	603,296	936,154	984,658	6,083,019	831,879	574,778	5,790,854
2028	883,018	663,175	603,916	936,554	985,225	6,085,515	832,540	575,260	5,792,306
2029	883,018	662,741	603,216	936,104	984,586	6,082,707	831,796	574,717	5,790,674
2030	883,018	662,539	602,888	935,892	984,287	6,081,389	831,449	574,462	5,789,907
2031	883,018	663,289	604,105	936,677	985,397	6,086,270	832,740	575,406	5,792,746
2032	883,018	663,218	603,988	936,601	985,290	6,085,801	832,616	575,316	5,792,472
2033	883,018	662,453	602,750	935,802	984,160	6,080,831	831,300	574,354	5,789,580
2034	883,018	662,934	603,528	936,304	984,870	6,083,956	832,128	574,960	5,791,398
2035	883,018	663,188	603,938	936,569	985,245	6,085,605	832,564	575,277	5,792,360
Total	47,024,096	30,357,237	26,436,893	42,575,597	44,676,784	304,573,771	39,035,881	26,895,107	289,881,164

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	385,659	0	0	0	0	0	0	0
1970	0	885,234	0	0	0	0	0	0	0
1971	10,291	2,400,543	3,471	0	3,471	0	0	0	0
1972	1,106,884	3,734,703	1,424,782	28,127	1,452,909	36,699	135,675	0	130,711
1973	1,243,941	4,142,935	1,777,260	49,949	1,827,209	36,207	146,739	0	161,838
1974	1,343,972	4,369,772	2,298,091	16,259	2,314,350	30,525	90,404	0	115,571
1975	1,537,862	5,090,233	2,403,430	35,193	2,438,623	40,588	122,584	0	137,684
1976	1,727,428	5,001,677	2,776,194	126,653	2,902,847	118,610	201,215	0	182,927
1977	1,961,081	6,065,390	3,845,464	83,936	3,929,400	93,565	226,906	0	180,884
1978	1,922,950	5,738,596	2,954,313	42,637	2,996,950	91,815	200,759	0	215,673
1979	1,798,566	5,960,033	3,539,402	45,997	3,585,399	99,670	307,386	0	261,205
1980	2,231,456	7,463,378	4,749,245	54,806	4,804,051	116,487	446,175	0	290,719
1981	2,762,773	7,646,858	5,485,957	64,886	5,550,843	316,590	585,003	0	325,112
1982	2,961,383	8,475,944	6,349,080	55,997	6,405,077	447,739	638,615	0	275,763
1983	4,302,165	11,303,322	14,153,033	96,397	14,249,430	345,229	564,698	0	368,139
1984	5,077,824	14,043,628	18,448,383	77,201	18,525,584	267,497	563,588	0	413,443
1985	5,683,454	14,964,899	18,134,698	137,928	18,272,626	298,932	475,028	0	450,444
1986	5,780,666	16,593,102	19,297,129	109,938	19,407,067	703,413	350,906	0	347,690
1987	5,636,043	17,063,245	17,398,908	98,355	17,497,263	1,261,056	558,996	0	818,475
1988	5,150,238	15,704,693	17,697,838	138,405	17,836,243	1,242,139	560,911	0	585,014
1989	5,458,633	16,336,263	17,641,151	88,488	17,729,639	1,049,615	283,065	0	366,590
1990	6,440,643	18,959,051	19,995,760	99,868	20,095,628	1,298,537	229,083	0	469,502
1991	5,805,189	18,565,503	19,903,346	131,558	20,034,904	1,432,360	665,443	0	1,025,089
1992	6,471,964	19,838,439	18,194,788	279,610	18,474,398	1,167,898	738,238	0	666,181
1993	7,583,165	23,092,943	19,051,939	199,640	19,251,579	1,868,745	606,763	0	1,232,409
1994	7,141,764	19,068,877	17,354,702	204,958	17,559,660	1,699,467	763,489	0	1,145,599
1995	6,540,575	19,680,665	19,360,033	191,516	19,551,549	1,284,146	614,314	0	1,941,939
1996	7,065,052	20,408,184	19,041,451	237,846	19,279,297	1,163,708	576,674	0	1,335,804
1997	7,387,904	21,710,020	19,724,881	176,120	19,901,001	1,330,450	730,628	0	1,401,562
1998	7,531,886	20,887,644	23,229,552	182,754	23,412,306	1,513,824	309,052	0	7,568,901
1999	7,516,434	20,275,816	17,071,179	146,189	17,217,368	3,208,823	630,302	0	5,290,403
2000	8,728,626	28,514,177	25,751,309	824,318	26,575,627	2,019,885	1,074,210	0	1,875,395
2001	8,472,059	28,597,919	25,242,809	884,935	26,127,744	1,969,104	1,067,228	0	1,687,701
2002	8,500,098	28,436,147	23,954,942	355,710	24,310,652	2,044,453	1,091,405	0	1,643,689
2003	8,505,649	28,454,747	23,961,483	355,946	24,317,429	2,046,253	1,100,159	0	1,649,313
2004	8,331,119	27,805,964	23,614,741	346,758	23,961,499	1,993,978	1,075,679	0	1,609,079
2005	8,328,178	27,796,053	23,611,239	346,635	23,957,874	1,993,034	1,071,270	0	1,606,243
2006	8,321,728	27,774,444	23,603,625	346,362	23,949,987	1,990,962	1,061,460	0	1,599,944
2007	8,323,133	27,779,119	23,605,273	346,421	23,951,694	1,991,412	1,063,628	0	1,601,333
2008	8,324,041	27,782,169	23,606,344	346,461	23,952,805	1,991,701	1,064,995	0	1,602,212
2009	8,325,006	27,785,387	23,607,475	346,503	23,953,978	1,992,010	1,066,490	0	1,603,172
2010	8,322,516	27,777,031	23,604,528	346,396	23,950,924	1,991,217	1,062,773	0	1,600,785
2011	8,352,482	27,884,473	23,662,494	347,862	24,010,356	1,999,980	1,072,527	0	1,610,482
2012	8,353,240	27,887,012	23,663,385	347,892	24,011,277	2,000,226	1,073,748	0	1,611,267
2013	8,358,355	27,904,155	23,669,424	348,111	24,017,535	2,001,871	1,081,560	0	1,616,286
2014	8,366,301	27,930,801	23,678,810	348,449	24,027,259	2,004,416	1,093,526	0	1,623,975
2015	8,366,061	27,929,996	23,678,523	348,438	24,026,961	2,004,342	1,093,239	0	1,623,790
2016	8,364,128	27,923,484	23,676,234	348,357	24,024,591	2,003,723	1,090,417	0	1,621,977
2017	8,365,393	27,927,727	23,677,724	348,411	24,026,135	2,004,134	1,092,373	0	1,623,232
2018	8,371,392	27,947,842	23,684,812	348,664	24,033,476	2,006,057	1,101,422	0	1,629,046
2019	8,367,774	27,935,695	23,680,529	348,513	24,029,042	2,004,902	1,096,087	0	1,625,619
2020	8,366,331	27,930,861	23,678,822	348,451	24,027,273	2,004,435	1,093,836	0	1,624,170
2021	8,363,700	27,922,033	23,675,718	348,339	24,024,057	2,003,592	1,089,850	0	1,621,611
2022	8,370,765	27,945,717	23,684,058	348,640	24,032,698	2,005,866	1,100,705	0	1,628,586
2023	8,363,636	27,921,812	23,675,635	348,336	24,023,971	2,003,572	1,089,826	0	1,621,598
2024	8,367,190	27,933,726	23,679,831	348,488	24,028,319	2,004,716	1,095,246	0	1,625,076
2025	8,366,248	27,930,585	23,678,730	348,449	24,027,179	2,004,411	1,093,716	0	1,624,096
2026	8,367,707	27,935,449	23,680,440	348,511	24,028,951	2,004,884	1,096,109	0	1,625,632
2027	8,365,558	27,928,295	23,677,924	348,419	24,026,343	2,004,191	1,092,665	0	1,623,420
2028	8,369,162	27,940,318	23,682,153	348,573	24,030,726	2,005,344	1,098,214	0	1,626,985
2029	8,365,122	27,926,800	23,677,399	348,400	24,025,799	2,004,054	1,092,107	0	1,623,063
2030	8,363,239	27,920,474	23,675,167	348,319	24,023,486	2,003,450	1,089,269	0	1,621,237
2031	8,370,222	27,943,925	23,683,429	348,617	24,032,046	2,005,688	1,099,794	0	1,628,001
2032	8,369,570	27,941,690	23,682,636	348,591	24,031,227	2,005,478	1,098,821	0	1,627,375
2033	8,362,431	27,917,778	23,674,219	348,284	24,022,503	2,003,191	1,088,046	0	1,620,452
2034	8,366,912	27,932,806	23,679,510	348,476	24,027,986	2,004,625	1,094,778	0	1,624,777
2035	8,369,289	27,940,747	23,682,307	348,579	24,030,886	2,005,397	1,098,605	0	1,627,234
Total	428,796,547	1,382,544,607	1,209,409,141	16,757,825	1,226,166,966	94,690,888	51,428,422	0	86,363,124

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	120,271	75,768	80,436	1,036,831	51,520	362,153	2,030,064	26	578
1973	148,631	60,641	66,539	1,283,816	65,475	353,262	2,323,148	20,541	679,328
1974	88,200	65,007	77,667	1,477,946	96,340	334,302	2,375,962	24,380	799,400
1975	118,898	135,462	77,825	1,630,554	111,141	419,450	2,794,186	29,337	885,021
1976	151,555	106,314	131,007	1,598,071	107,787	304,638	2,902,124	51,356	1,103,139
1977	112,589	98,757	86,279	1,882,080	71,228	48,359	2,800,647	62,584	1,412,740
1978	120,584	109,271	71,763	2,211,965	72,179	637,401	3,731,410	67,186	1,159,950
1979	194,104	203,078	121,586	2,104,832	76,960	202,566	3,571,387	84,462	1,235,189
1980	237,250	156,794	117,274	2,670,387	147,009	688,605	4,870,700	72,651	1,532,535
1981	292,081	181,062	119,602	3,030,407	134,895	47,750	5,032,502	35,662	1,575,444
1982	330,502	186,109	125,429	3,248,883	299,712	623,755	6,176,507	26,852	1,822,250
1983	326,767	219,943	140,523	3,899,769	223,626	384,292	6,472,986	19,017	1,663,599
1984	329,933	266,919	146,866	4,783,997	59,337	1,104,149	7,935,729	11,319	2,325,661
1985	388,327	799,514	125,780	5,330,501	261,135	811,346	8,941,007	17,764	2,707,662
1986	315,566	242,158	178,847	6,190,812	156,053	515,945	9,001,390	31,012	2,768,728
1987	357,971	298,190	236,263	5,731,239	151,796	732,607	10,146,593	19,362	2,847,390
1988	400,005	331,099	149,876	6,910,472	253,833	970,052	11,403,401	36,576	3,087,873
1989	345,614	194,047	138,825	5,963,386	349,544	1,242,144	9,932,830	30,881	3,190,809
1990	202,412	273,748	49,174	6,905,442	436,785	1,891,053	11,755,736	25,518	3,330,913
1991	516,257	478,555	231,223	6,589,762	184,606	1,561,051	12,684,346	32,172	2,885,692
1992	696,623	585,072	168,251	6,227,757	221,929	622,116	11,094,065	55,819	3,032,908
1993	818,675	509,309	207,818	6,833,861	251,742	1,708,915	14,038,237	72,464	4,228,744
1994	957,231	873,175	241,671	7,690,314	854,556	1,258,741	15,484,243	105,373	5,139,776
1995	2,411,412	355,198	179,930	6,994,639	589,429	746,371	15,117,378	96,781	4,357,648
1996	1,713,145	790,618	136,397	8,590,347	622,889	(78,782)	14,850,800	156,395	4,051,744
1997	2,043,179	640,177	189,241	8,138,580	1,586,227	3,355,446	19,415,490	177,217	4,585,198
1998	508,030	297,621	115,100	8,888,912	1,925,089	1,134,837	22,261,366	142,703	4,857,213
1999	1,580,360	1,335,521	167,126	8,791,292	2,323,665	1,293,244	24,620,736	186,963	6,772,384
2000	1,073,197	729,400	434,546	9,757,954	686,651	2,004,578	19,655,816	78,100	6,726,315
2001	937,385	702,931	438,305	8,935,429	708,114	1,955,775	18,401,972	68,533	6,205,200
2002	963,280	724,292	399,170	8,615,552	460,808	2,105,786	18,048,435	71,198	6,309,456
2003	968,904	727,470	401,663	8,638,880	462,281	574,182	16,569,105	71,198	6,311,419
2004	945,946	709,945	392,167	8,466,972	459,567	1,251,246	16,904,579	69,338	6,179,335
2005	943,110	708,344	390,913	8,455,020	458,779	3,651,921	19,278,634	69,338	6,178,284
2006	936,811	704,781	388,116	8,428,608	457,066	950,562	16,518,310	69,338	6,175,999
2007	938,200	705,566	388,735	8,434,405	457,437	2,229,021	17,809,737	69,338	6,176,494
2008	939,079	706,065	389,124	8,438,095	457,677	1,639,761	17,228,709	69,338	6,176,815
2009	940,039	706,606	389,550	8,442,095	457,932	2,203,577	17,801,471	69,338	6,177,154
2010	937,651	705,257	388,490	8,432,029	457,269	1,801,606	17,377,077	69,338	6,176,271
2011	944,932	710,012	391,624	8,474,192	458,887	2,269,521	17,932,157	69,598	6,197,838
2012	945,717	710,452	391,972	8,477,423	459,087	1,937,917	17,607,809	69,598	6,198,106
2013	950,736	713,287	394,194	8,498,431	460,447	1,021,347	16,738,159	69,598	6,199,918
2014	958,425	717,634	397,607	8,530,752	462,559	2,674,028	18,462,922	69,598	6,202,734
2015	958,241	717,533	397,525	8,529,916	462,495	1,015,420	16,802,501	69,598	6,202,647
2016	956,427	716,506	396,721	8,522,218	461,979	2,915,675	18,685,643	69,598	6,201,960
2017	957,683	717,217	397,279	8,527,457	462,315	1,702,183	17,483,873	69,598	6,202,407
2018	963,497	720,503	399,856	8,551,888	463,909	2,005,859	17,842,037	69,598	6,204,534
2019	960,069	718,564	398,336	8,537,384	462,947	2,901,368	18,705,276	69,598	6,203,249
2020	958,620	717,745	397,694	8,531,364	462,562	1,772,763	17,563,189	69,598	6,202,737
2021	956,061	716,300	396,560	8,520,617	461,863	787,125	16,553,579	69,598	6,201,806
2022	963,036	720,243	399,651	8,549,771	463,741	1,853,883	17,685,482	69,598	6,204,309
2023	956,048	716,292	396,554	8,520,493	461,845	2,863,977	18,630,205	69,598	6,201,781
2024	959,526	718,259	398,096	8,535,071	462,790	1,696,727	17,495,507	69,598	6,203,040
2025	958,546	717,702	397,660	8,531,043	462,542	1,884,972	17,674,688	69,598	6,202,710
2026	960,082	718,572	398,345	8,537,341	462,926	2,971,320	18,775,211	69,598	6,203,222
2027	957,870	717,324	397,363	8,528,219	462,359	1,525,009	17,308,420	69,598	6,202,468
2028	961,436	719,336	398,943	8,543,088	463,311	822,468	16,639,125	69,598	6,203,737
2029	957,514	717,120	397,202	8,526,633	462,241	2,800,809	18,580,743	69,598	6,202,310
2030	955,687	716,089	396,393	8,518,954	461,739	2,915,579	18,678,397	69,598	6,201,640
2031	962,451	719,910	399,393	8,547,394	463,598	228,941	16,055,170	69,598	6,204,120
2032	961,825	719,558	399,114	8,544,733	463,420	2,782,156	18,602,480	69,598	6,203,882
2033	954,902	715,645	396,044	8,515,665	461,526	1,461,052	17,216,523	69,598	6,201,356
2034	959,228	718,092	397,964	8,533,855	462,717	1,253,163	17,049,199	69,598	6,202,943
2035	961,685	719,479	399,053	8,543,991	463,346	4,295,855	20,114,645	69,598	6,203,783
Total	50,290,018	35,629,158	18,210,240	444,859,786	28,767,219	94,002,900	904,241,755	4,206,718	297,891,495

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	719,255	159,249	199,145	234,196	88,198
1973	136,352	79	0	836,300	779,949	339,363	122,664	264,850	119,743
1974	155,262	34,693	854,637	1,868,372	883,312	158,366	112,458	350,160	(4,525)
1975	110,729	69,082	723,814	1,817,983	1,049,990	176,676	194,724	801,457	75,870
1976	138,575	100,400	635,853	2,029,323	1,220,429	215,588	202,591	624,614	98,268
1977	127,543	92,647	825,880	2,521,394	1,268,813	116,939	218,129	684,679	184
1978	166,919	68,363	835,082	2,297,500	1,174,708	342,479	267,308	415,641	17,764
1979	142,586	92,812	265,525	1,820,574	1,366,942	285,575	284,188	972,584	29,850
1980	158,340	129,897	1,120,131	3,013,554	1,698,215	224,472	455,619	874,259	288,303
1981	160,053	111,722	333,550	2,216,431	1,783,405	123,264	615,047	2,305,110	8,794
1982	205,350	135,463	1,518,759	3,708,674	1,919,979	190,500	702,265	2,208,264	414,230
1983	244,720	124,651	412,806	2,464,793	2,739,814	149,333	888,475	745,939	579,882
1984	240,496	190,924	769,068	3,537,468	3,463,038	81,260	2,358,495	537,207	719,282
1985	451,600	182,242	871,492	4,230,760	3,866,946	295,836	3,047,591	975,729	614,735
1986	439,048	256,526	982,332	4,477,646	3,791,427	457,604	2,893,171	1,480,015	1,032,216
1987	278,094	218,717	1,118,529	4,482,092	3,423,494	213,106	2,933,342	944,604	459,398
1988	271,868	200,811	1,176,659	4,773,787	3,447,403	255,113	3,017,463	883,714	446,468
1989	230,953	281,861	1,130,035	4,864,539	4,025,641	405,583	2,738,143	1,398,165	865,738
1990	437,812	308,144	1,538,449	5,640,836	4,088,481	383,655	3,232,445	3,153,869	777,713
1991	843,388	632,912	1,630,321	6,024,485	3,862,056	304,143	3,550,063	639,527	763,037
1992	281,864	5,636,464	1,102,519	10,109,574	4,286,050	327,802	3,892,480	1,014,551	872,953
1993	382,195	570,563	994,721	6,248,687	3,969,075	343,304	4,515,385	1,670,952	852,208
1994	617,136	415,603	1,020,211	7,298,099	3,649,849	296,166	3,359,381	1,878,175	872,624
1995	1,308,828	704,154	894,338	7,361,749	4,137,046	883,315	4,750,275	1,588,080	754,904
1996	1,001,063	1,041,697	1,316,493	7,567,392	4,511,858	966,044	3,593,671	4,208,195	877,111
1997	493,841	949,188	953,590	7,159,034	4,543,506	1,030,809	2,429,066	3,755,901	1,597,361
1998	379,997	991,426	(67,444)	6,303,895	4,872,244	464,376	3,474,463	2,398,630	1,996,114
1999	469,865	1,946,146	838,842	10,214,200	4,509,723	4,334,888	5,192,916	1,420,008	977,360
2000	941,324	643,596	2,311,538	10,700,873	5,918,015	626,041	2,933,597	3,515,700	1,334,001
2001	910,581	624,058	2,110,766	9,919,138	6,229,995	673,918	3,015,679	3,721,438	825,556
2002	660,283	460,906	2,276,820	9,778,663	6,377,899	681,064	3,112,054	4,095,993	749,432
2003	660,283	460,906	2,149,899	9,653,705	6,379,713	690,183	3,114,784	3,808,643	749,432
2004	643,812	448,869	1,873,361	9,214,715	6,242,295	677,121	3,047,556	3,722,033	736,218
2005	643,812	448,869	2,423,854	9,764,157	6,241,337	672,417	3,046,100	3,706,174	736,218
2006	643,812	448,869	1,655,845	8,993,863	6,239,226	661,796	3,042,903	3,669,723	736,218
2007	643,812	448,869	2,200,131	9,538,644	6,239,685	664,160	3,043,597	3,677,680	736,218
2008	643,812	448,869	1,995,254	9,334,088	6,239,982	665,662	3,044,047	3,682,906	736,218
2009	643,812	448,869	2,049,859	9,389,032	6,240,296	667,262	3,044,525	3,688,533	736,218
2010	643,812	448,869	2,373,596	9,711,886	6,239,485	663,206	3,043,293	3,674,803	736,218
2011	646,120	450,554	1,953,852	9,317,962	6,260,507	671,978	3,055,222	3,710,836	738,066
2012	646,120	450,554	2,138,316	9,502,694	6,260,756	673,225	3,055,596	3,714,979	738,066
2013	646,120	450,554	2,406,829	9,773,019	6,262,426	681,623	3,058,127	3,743,756	738,066
2014	646,120	450,554	2,017,033	9,386,039	6,265,022	694,651	3,062,067	3,788,436	738,066
2015	646,120	450,554	2,271,185	9,640,104	6,264,944	694,260	3,061,945	3,787,049	738,066
2016	646,120	450,554	1,950,088	9,318,320	6,264,309	691,131	3,060,984	3,776,194	738,066
2017	646,120	450,554	2,567,697	9,936,376	6,264,726	693,210	3,061,608	3,783,303	738,066
2018	646,120	450,554	2,079,842	9,450,648	6,266,687	703,051	3,064,580	3,816,894	738,066
2019	646,120	450,554	2,591,158	9,960,679	6,265,505	697,162	3,062,785	3,796,515	738,066
2020	646,120	450,554	1,825,156	9,194,165	6,265,033	694,790	3,062,066	3,788,011	738,066
2021	646,120	450,554	2,141,521	9,509,599	6,264,174	690,471	3,060,764	3,773,298	738,066
2022	646,120	450,554	2,977,928	10,348,509	6,266,481	702,059	3,064,261	3,813,117	738,066
2023	646,120	450,554	2,084,981	9,453,034	6,264,150	690,384	3,060,731	3,773,191	738,066
2024	646,120	450,554	2,408,925	9,778,237	6,265,314	696,214	3,062,492	3,793,157	738,066
2025	646,120	450,554	1,750,761	9,119,743	6,265,007	694,639	3,062,022	3,787,349	738,066
2026	646,120	450,554	2,900,557	10,270,051	6,265,482	697,077	3,062,746	3,796,018	738,066
2027	646,120	450,554	1,475,938	8,844,678	6,264,781	693,459	3,061,690	3,783,200	738,066
2028	646,120	450,554	2,329,699	9,699,708	6,265,955	699,496	3,063,474	3,804,865	738,066
2029	646,120	450,554	2,196,613	9,565,195	6,264,636	692,794	3,061,462	3,780,881	738,066
2030	646,120	450,554	2,264,557	9,632,469	6,264,024	689,737	3,060,534	3,770,946	738,066
2031	646,120	450,554	3,013,575	10,383,967	6,266,301	701,111	3,063,999	3,809,633	738,066
2032	646,120	450,554	1,665,307	9,035,461	6,266,092	700,174	3,063,676	3,807,226	738,066
2033	646,120	450,554	2,443,370	9,810,998	6,263,757	688,385	3,060,128	3,765,882	738,066
2034	646,120	450,554	2,214,790	9,584,005	6,265,224	695,742	3,062,355	3,791,562	738,066
2035	646,120	450,554	2,944,015	10,314,070	6,265,998	699,678	3,063,528	3,804,849	738,066
Total	33,706,741	32,082,616	103,830,808	471,718,378	306,257,867	38,194,139	169,267,940	173,953,848	43,459,380

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)									Grand Total (74)
	West Branch (cont'd.)		Coastal Branch						Total (73)	
	Reach 30 (65)	Subtotal (66)	Reach 31A (a (67)	Reach 33A (68)	Reach 33B (69)	Reach 34 (70)	Reach 35 (71)	Subtotal (72)		
1961	0	0	0	0		0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	42,918
1963	0	0	0	0	0	0	0	0	0	168,358
1964	0	0	0	0	0	0	0	0	0	184,729
1965	0	0	0	0	0	0	0	0	0	378,874
1966	0	0	0	0	0	0	0	0	0	408,397
1967	0	0	0	0	0	0	0	0	0	634,505
1968	0	0	0	0	0	0	0	0	2,160,548	2,745,160
1969	0	0	509,728	0	0	0	0	509,728	3,324,718	4,074,939
1970	0	0	609,988	0	0	0	0	609,988	3,983,062	4,676,282
1971	0	0	699,052	0	0	0	0	699,052	5,614,013	6,185,714
1972	420,789	1,820,832	697,576	0	0	0	0	697,576	12,353,356	12,998,869
1973	621,431	2,248,000	641,626	0	0	0	0	641,626	14,590,688	15,194,233
1974	723,949	2,223,720	669,279	0	0	0	0	669,279	16,598,762	17,372,561
1975	841,991	3,140,708	806,429	0	0	0	0	806,429	19,569,999	20,517,423
1976	(650,944)	1,710,546	840,927	0	0	0	0	840,927	19,002,859	20,027,213
1977	634,581	2,923,325	872,169	0	0	0	0	872,169	23,267,885	24,213,489
1978	3,088,954	5,306,854	934,119	0	0	0	0	934,119	24,818,739	26,012,786
1979	958,068	3,897,207	871,688	0	0	0	0	871,688	23,421,881	24,675,598
1980	222,549	3,763,417	1,047,396	0	0	0	0	1,047,396	30,100,453	32,033,503
1981	1,093,897	5,929,517	1,037,469	0	0	0	0	1,037,469	33,879,629	35,511,471
1982	978,624	6,413,862	1,015,555	0	0	0	0	1,015,555	39,510,293	41,606,760
1983	3,698,681	8,802,124	1,146,269	0	0	0	0	1,146,269	54,538,199	56,797,717
1984	755,136	7,914,418	1,427,192	0	0	0	0	1,427,192	63,942,473	67,100,028
1985	1,753,355	10,554,192	1,849,827	0	0	0	0	1,849,827	69,694,849	73,267,738
1986	1,338,657	10,993,090	1,714,723	0	0	0	0	1,714,723	73,432,601	76,702,757
1987	1,406,519	9,380,463	1,689,141	0	0	0	0	1,689,141	71,439,007	75,213,159
1988	1,452,589	9,502,750	1,964,428	0	0	0	0	1,964,428	72,344,510	76,056,011
1989	1,505,029	10,938,299	1,768,942	0	0	0	0	1,768,942	73,889,469	78,657,741
1990	847,500	12,483,663	2,274,772	0	0	0	0	2,274,772	86,130,115	91,361,385
1991	1,191,090	10,309,916	2,187,841	0	0	0	0	2,187,841	84,937,666	89,043,252
1992	2,259,032	12,652,868	2,465,364	0	0	0	0	2,465,364	92,211,998	97,280,201
1993	1,157,876	12,508,800	2,811,441	0	0	0	0	2,811,441	97,570,207	104,849,769
1994	1,699,254	11,755,449	3,894,600	0	0	0	0	3,894,600	92,005,622	99,612,853
1995	(421,879)	11,691,741	3,481,049	0	0	0	0	3,481,049	98,634,823	105,406,892
1996	1,574,098	15,730,977	5,144,684	0	0	0	0	5,144,684	104,852,240	111,751,831
1997	1,521,491	14,878,134	2,523,741	0	0	0	0	2,523,741	107,647,091	113,385,359
1998	1,291,185	14,497,012	4,303,206	1,878,551	1,386	160,400	88,026	6,431,569	120,663,426	127,330,617
1999	1,953,359	18,388,254	4,059,052	1,929,550	11,222	190,933	94,745	6,285,502	117,965,179	126,831,718
2000	3,124,723	17,452,077	4,497,166	1,946,876	0	1,738	4,617	6,450,397	134,134,932	143,073,890
2001	3,387,341	17,853,927	4,121,993	1,627,609	0	1,840	4,892	5,756,334	131,365,553	140,521,235
2002	2,573,151	17,589,593	4,273,633	1,491,485	0	1,708	4,541	5,771,367	126,960,912	136,178,209
2003	2,309,753	17,052,508	4,275,544	1,492,262	0	1,850	4,916	5,774,572	124,865,688	134,086,570
2004	2,534,658	16,959,881	4,171,239	1,452,320	0	1,863	4,950	5,630,372	122,848,837	131,825,721
2005	4,005,124	18,407,370	4,170,216	1,451,903	0	1,787	4,750	5,628,656	127,195,173	136,170,188
2006	2,343,842	16,693,708	4,167,990	1,450,996	0	1,624	4,317	5,624,927	121,897,267	130,868,219
2007	2,802,188	17,163,528	4,168,471	1,451,194	0	1,659	4,410	5,625,734	124,214,884	133,186,713
2008	2,965,511	17,334,326	4,168,784	1,451,321	0	1,683	4,470	5,626,258	123,607,661	132,580,059
2009	3,064,108	17,440,942	4,169,115	1,451,456	0	1,707	4,533	5,626,811	124,349,964	133,322,969
2010	2,970,305	17,327,310	4,168,254	1,451,105	0	1,643	4,368	5,625,370	124,114,035	133,085,468
2011	3,141,774	17,578,383	4,184,330	1,457,340	0	1,747	4,647	5,648,064	124,819,308	133,827,756
2012	2,966,603	17,409,225	4,184,590	1,457,445	0	1,767	4,698	5,648,500	124,516,826	133,525,755
2013	3,380,476	17,864,474	4,186,356	1,458,165	0	1,897	5,043	5,651,461	124,415,299	133,427,449
2014	3,063,010	17,611,252	4,189,099	1,459,284	0	2,099	5,577	5,656,059	125,566,007	134,583,172
2015	2,918,785	17,465,049	4,189,015	1,459,249	0	2,094	5,562	5,655,920	124,011,449	133,028,459
2016	3,488,226	18,018,910	4,188,346	1,458,977	0	2,043	5,430	5,654,796	126,110,501	135,126,288
2017	3,306,832	17,847,745	4,188,781	1,459,154	0	2,075	5,515	5,655,525	125,366,136	134,382,721
2018	3,215,111	17,804,389	4,190,853	1,459,999	0	2,227	5,920	5,658,999	125,245,157	134,265,527
2019	3,765,249	18,325,282	4,189,601	1,459,487	0	2,136	5,675	5,656,899	127,109,151	136,127,235
2020	3,562,621	18,110,587	4,189,103	1,459,287	0	2,099	5,578	5,656,067	124,973,854	133,991,031
2021	2,762,737	17,289,510	4,188,194	1,458,916	0	2,033	5,401	5,654,544	123,436,693	132,452,211
2022	2,787,492	17,371,476	4,190,632	1,459,910	0	2,211	5,878	5,658,631	125,548,257	134,568,229
2023	3,152,199	17,678,721	4,188,171	1,458,906	0	2,032	5,396	5,654,505	125,845,404	134,860,878
2024	3,938,728	18,493,971	4,189,398	1,459,404	0	2,121	5,635	5,656,558	125,880,730	134,898,443
2025	2,148,269	16,695,352	4,189,075	1,459,274	0	2,097	5,573	5,656,019	123,595,014	132,612,141
2026	3,970,940	18,530,329	4,189,576	1,459,477	0	2,134	5,670	5,656,857	127,692,889	136,710,926
2027	37,724	14,578,920	4,188,839	1,459,180	0	2,079	5,526	5,655,624	120,831,584	129,848,279
2028	7,197,776	21,769,632	4,190,075	1,459,683	0	2,169	5,768	5,657,695	128,237,842	137,256,793
2029	1,802,965	16,340,804	4,188,686	1,459,115	0	2,067	5,498	5,655,366	124,582,584	133,598,997
2030	3,172,231	17,695,538	4,188,033	1,458,850	0	2,021	5,371	5,654,275	126,086,538	135,101,761
2031	96,646	14,675,756	4,190,448	1,459,832	0	2,199	5,840	5,658,319	121,253,252	130,272,887
2032	7,184,408	21,759,642	4,190,218	1,459,739	0	2,181	5,796	5,657,934	129,530,369	138,549,580
2033	2,114,529	16,630,747	4,187,758	1,458,739	0	1,999	5,315	5,653,811	123,731,707	132,746,425
2034	3,081,948	17,634,897	4,189,304	1,459,367	0	2,115	5,617	5,656,403	124,378,842	133,396,384
2035	4,032,062	18,604,181	4,190,120	1,459,701	0	2,174	5,777	5,657,772	129,163,347	138,182,382
Total	146,286,906	877,420,080	207,030,279	57,005,108	12,608	422,251	371,241	264,841,487	6,271,580,006	6,702,553,760

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	202,947	0	0
1969	0	0	8,551	8,551	257,579	293,741	135,425	0	0
1970	0	0	13,598	13,598	396,358	346,215	211,197	1	0
1971	0	0	10,609	10,609	381,662	574,015	225,188	138,001	17,664
1972	0	0	14,434	14,434	598,702	933,292	502,196	241,714	97,004
1973	0	0	14,449	14,449	493,490	688,030	381,232	306,268	278,923
1974	0	0	17,473	17,473	565,575	783,562	447,772	358,739	367,266
1975	0	0	14,779	14,779	349,758	1,341,019	518,816	550,860	595,252
1976	0	0	20,856	20,856	571,361	1,638,453	641,115	755,747	756,175
1977	0	0	22,635	22,635	512,996	1,013,307	284,828	298,300	337,889
1978	0	0	21,692	21,692	586,355	2,339,502	607,042	732,036	658,404
1979	0	0	16,237	16,237	605,136	3,554,256	1,008,564	818,816	791,488
1980	0	0	19,945	19,945	523,369	2,083,336	1,129,152	1,051,629	1,047,495
1981	0	0	23,842	23,842	567,692	3,952,931	1,939,189	1,336,867	1,319,739
1982	0	0	12,157	12,157	605,780	3,082,031	1,363,705	1,200,226	1,213,660
1983	0	0	2,342	2,342	82,222	879,916	343,597	341,584	304,715
1984	0	0	4,822	4,822	271,543	1,695,568	885,941	678,307	602,408
1985	0	0	10,188	10,188	451,020	3,171,920	1,613,745	1,397,490	1,397,098
1986	0	0	15,501	15,501	807,984	6,601,752	2,627,407	2,405,224	2,432,322
1987	0	0	27,223	27,223	886,956	5,753,132	2,523,544	2,240,552	2,223,371
1988	17,813	0	24,020	41,833	909,300	6,280,898	2,611,297	2,562,330	2,560,462
1989	29,819	43,846	26,519	100,184	1,161,160	9,748,180	3,910,492	3,964,188	3,974,290
1990	52,210	67,109	40,775	160,094	1,834,626	10,467,177	4,501,309	5,785,069	6,019,952
1991	10,429	10,118	5,252	25,799	378,966	1,923,595	490,766	903,923	1,031,345
1992	13,319	13,070	9,406	35,795	311,251	3,211,086	1,168,304	1,255,567	1,314,358
1993	(11,941)	(8,753)	(5,392)	(26,086)	(158,214)	532,899	345,215	(124,821)	(102,311)
1994	46,538	39,910	29,105	115,553	799,370	5,658,038	2,298,300	2,504,629	2,516,185
1995	20,014	20,620	11,791	52,425	247,645	4,017,881	1,513,362	919,965	841,178
1996	57,320	47,288	23,483	128,091	619,160	8,305,492	4,016,045	2,503,370	2,310,456
1997	67,416	52,935	21,955	142,306	986,312	6,946,568	2,842,755	2,583,689	2,411,361
1998	(10,647)	(9,488)	(4,554)	(24,689)	(125,142)	243,272	(316,027)	(248,827)	(223,550)
1999	36,079	25,334	9,651	71,064	568,848	6,305,526	1,918,411	1,729,616	1,679,572
2000	207,415	98,890	160,523	466,828	2,168,613	17,961,090	6,931,211	7,770,161	8,919,364
2001	181,360	105,351	139,744	426,455	2,285,068	18,200,865	7,027,052	8,148,176	9,408,347
2002	213,434	121,944	165,263	500,641	2,629,742	20,249,556	8,170,569	9,495,205	10,964,333
2003	167,587	159,621	172,942	500,150	2,449,532	18,649,164	7,529,368	8,469,614	8,233,073
2004	150,632	144,849	156,181	451,662	2,182,872	16,026,279	6,446,633	7,312,006	7,098,211
2005	175,486	167,663	182,875	526,024	2,635,334	17,872,388	7,891,417	9,288,732	9,071,368
2006	181,028	171,588	190,742	543,358	2,727,196	19,186,659	8,213,329	9,790,917	9,577,194
2007	178,932	168,331	190,603	537,866	2,675,722	18,309,538	8,139,638	9,794,110	9,590,096
2008	161,092	150,395	173,526	485,013	2,390,935	18,800,629	7,321,555	8,849,955	8,670,833
2009	168,961	156,492	183,830	509,283	2,488,168	16,897,362	7,673,572	9,318,859	9,135,773
2010	179,122	164,628	196,924	540,674	2,617,238	21,403,717	8,138,111	9,921,447	9,732,482
2011	180,572	164,697	200,578	545,847	2,618,331	19,420,856	8,141,663	9,925,186	9,736,199
2012	188,937	171,023	212,025	571,985	2,718,904	18,490,061	8,543,750	10,463,845	10,272,504
2013	210,770	189,592	238,441	638,803	3,014,106	24,198,150	9,582,880	11,792,586	11,586,180
2014	229,893	205,031	263,040	697,964	3,259,570	21,721,190	10,473,755	12,945,772	12,728,403
2015	237,050	208,419	277,047	722,516	3,313,418	24,370,674	10,658,703	13,178,702	12,958,371
2016	242,727	210,756	289,254	742,737	3,350,579	27,928,358	10,983,262	13,685,974	13,474,291
2017	241,854	207,419	293,669	742,942	3,297,524	24,833,059	10,670,909	13,227,152	13,011,445
2018	252,557	214,005	312,915	779,477	3,402,230	24,269,777	11,058,792	13,733,285	13,513,248
2019	262,494	219,795	331,746	814,035	3,494,280	28,629,022	11,674,901	14,654,889	14,445,687
2020	249,659	206,639	321,343	777,641	3,285,116	25,340,053	10,942,746	13,721,362	13,522,935
2021	249,783	206,266	322,324	778,373	3,279,193	24,960,505	10,987,182	13,807,915	13,613,266
2022	240,891	198,923	310,849	750,663	3,162,454	22,992,470	10,595,495	13,316,234	13,128,491
2023	242,471	200,228	312,887	755,586	3,183,197	24,893,213	10,710,124	13,482,357	13,295,838
2024	229,904	205,031	263,049	697,984	3,259,570	21,976,397	10,484,640	12,964,414	12,747,429
2025	251,469	207,657	324,498	783,624	3,301,320	22,817,178	11,054,767	13,890,019	13,693,704
2026	253,457	209,300	327,065	789,822	3,327,425	28,565,482	11,159,441	14,028,479	13,831,449
2027	249,053	205,663	321,382	776,098	3,269,609	25,465,008	11,006,264	13,857,518	13,666,309
2028	251,050	207,311	323,957	782,318	3,295,817	26,030,575	11,034,976	13,864,473	13,668,405
2029	247,363	204,267	319,200	770,830	3,247,419	24,804,000	10,919,732	13,742,660	13,551,980
2030	249,668	206,171	322,175	778,014	3,277,676	25,959,479	10,971,910	13,784,117	13,588,982
2031	245,726	202,916	317,088	765,730	3,225,926	22,829,940	10,602,574	13,224,897	13,022,466
2032	251,390	207,592	324,397	783,379	3,300,287	25,620,552	10,991,404	13,780,178	13,580,886
2033	265,973	219,635	343,214	828,822	3,491,732	26,415,417	11,564,173	14,468,141	14,253,810
2034	254,786	210,397	328,779	793,962	3,344,872	25,463,841	11,182,768	14,041,313	13,841,568
2035	248,796	205,450	321,049	775,295	3,266,226	25,017,293	11,018,850	13,887,419	13,698,464
Total	8,321,711	7,005,924	9,925,457	25,253,092	126,349,838	921,402,898	393,390,947	470,819,128	467,607,555

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 Power Plant (12)	Pearblossom Pumping Plant (13)	Mojave Siphon Power Plant (14)	Silverwood Lake (d (15)	Devil Canyon Power Plant (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	180,602	542,625	0	25,568	0	0	(3,024)	0	102,315
1973	441,598	1,548,428	0	231,389	0	0	(436,768)	0	158,587
1974	618,864	2,164,223	0	354,093	0	0	(521,656)	0	193,311
1975	1,149,731	4,010,395	0	604,161	0	0	(1,071,023)	0	350,436
1976	1,561,385	5,443,936	0	932,444	0	0	(1,519,156)	0	362,767
1977	703,802	2,360,624	0	358,028	0	0	(1,175,966)	0	111,135
1978	1,186,696	4,180,131	0	1,551,015	0	0	(3,038,194)	0	125,183
1979	1,581,250	5,475,688	0	1,881,587	0	0	(3,419,581)	0	138,384
1980	2,102,439	7,028,235	0	1,762,063	0	0	(3,318,152)	0	236,768
1981	2,838,773	9,351,931	0	2,296,771	0	0	(3,842,971)	0	444,280
1982	2,424,920	8,352,207	0	1,498,620	0	0	(2,736,072)	0	539,245
1983	540,330	1,582,582	0	341,957	0	384,275	(5,478,830)	0	71,197
1984	1,129,131	3,448,759	0	622,123	0	0	(7,326,265)	(10,080)	240,134
1985	2,781,953	9,261,674	0	1,195,768	0	0	(10,477,567)	(56,570)	874,069
1986	4,999,949	16,956,023	(1,013,756)	2,359,599	0	0	(11,484,996)	0	1,269,590
1987	4,456,059	14,684,476	(1,026,193)	1,831,238	0	131,606	(10,814,483)	53,242	1,325,936
1988	5,126,229	16,819,159	(744,374)	2,375,784	0	0	(14,495,967)	0	1,421,097
1989	8,369,623	28,090,313	(766,443)	4,102,557	0	686,468	(18,532,961)	89,890	2,013,335
1990	13,630,073	48,369,421	(834,673)	6,504,876	0	89,075	(20,911,839)	147,163	2,857,409
1991	2,426,220	8,641,086	(269,625)	996,352	0	0	(4,884,013)	0	534,818
1992	2,642,161	8,854,347	(934,311)	1,167,670	0	156,847	(9,513,281)	(61,233)	717,740
1993	(582,580)	(2,649,876)	(56,908)	(253,503)	0	(34,870)	(7,502,549)	0	68,719
1994	5,276,189	18,302,830	(58,712)	2,572,826	0	0	(11,662,318)	147,989	1,203,006
1995	1,677,210	5,571,517	(1,242,189)	1,025,717	0	467,095	(9,742,248)	0	247,869
1996	4,899,576	17,115,554	(2,811,564)	2,673,483	(923,213)	906,220	(12,358,465)	0	895,929
1997	5,410,787	19,364,138	(2,478,032)	3,022,354	(1,672,148)	0	(13,227,863)	125,510	897,657
1998	(497,603)	(1,715,651)	(2,014,963)	(413,513)	(1,252,047)	(4,361)	(10,183,555)	0	(25,895)
1999	4,501,301	14,621,522	(2,980,122)	2,261,839	(2,587,958)	0	(15,232,207)	0	738,127
2000	18,915,157	66,707,158	(5,429,280)	10,349,013	(7,323,011)	0	(27,537,543)	0	3,151,381
2001	19,982,487	70,492,177	(5,199,967)	11,897,058	(8,120,669)	0	(28,926,331)	0	3,242,617
2002	23,292,620	82,159,764	(5,408,959)	14,797,682	(8,740,437)	(286,133)	(31,257,398)	0	3,411,445
2003	19,333,100	72,362,373	(5,650,722)	14,406,597	(6,661,632)	1,632,542	(32,364,849)	(333,317)	2,312,647
2004	16,660,847	62,338,891	(5,544,324)	12,768,309	(6,724,431)	0	(32,894,229)	0	1,870,326
2005	21,339,485	79,950,842	(5,235,585)	12,739,030	(6,143,665)	0	(29,822,678)	233,686	3,809,709
2006	22,542,982	84,489,067	(5,313,547)	13,294,945	(6,235,580)	888,263	(30,131,155)	(17,831)	4,112,785
2007	22,582,137	84,654,080	(5,289,464)	13,027,505	(6,173,459)	0	(30,484,830)	0	4,247,429
2008	20,421,850	76,565,445	(5,492,880)	12,127,335	(6,459,389)	0	(30,938,037)	(220,583)	3,719,634
2009	21,521,962	80,700,814	(5,489,625)	12,701,604	(6,425,880)	557,682	(31,187,934)	0	3,959,171
2010	22,932,799	86,002,014	(5,509,169)	13,549,203	(6,455,573)	179,164	(31,286,984)	0	4,223,495
2011	22,941,903	86,035,970	(5,494,519)	13,534,909	(6,423,711)	0	(31,870,747)	0	4,232,167
2012	24,211,985	90,814,706	(5,688,812)	14,507,037	(6,745,869)	1,026,244	(32,122,271)	514,082	4,398,267
2013	27,316,795	102,477,152	(5,613,805)	16,178,126	(6,668,362)	632,809	(32,085,776)	0	5,048,660
2014	30,017,876	112,627,692	(5,676,567)	17,621,856	(6,740,136)	0	(32,504,804)	(278,140)	5,621,473
2015	30,561,247	114,667,808	(5,704,758)	18,071,455	(6,850,801)	0	(33,028,692)	0	5,677,145
2016	31,792,529	119,321,061	(5,857,095)	18,982,928	(7,074,731)	1,411,639	(33,725,371)	(498,034)	5,868,195
2017	30,691,185	115,165,160	(5,684,701)	18,168,305	(6,902,986)	0	(33,425,816)	0	5,703,234
2018	31,877,963	119,626,978	(5,873,993)	19,272,239	(7,410,358)	2,297,816	(33,732,724)	585,016	5,782,222
2019	34,099,874	128,013,166	(5,800,535)	19,744,203	(7,167,964)	0	(33,963,103)	0	6,554,403
2020	31,919,614	119,823,237	(5,838,310)	18,857,558	(7,274,289)	0	(34,387,321)	414,548	5,990,298
2021	32,137,215	120,649,398	(5,921,158)	19,116,325	(7,423,697)	(256,963)	(34,536,471)	(510,147)	5,992,317
2022	30,992,732	116,353,109	(5,892,536)	18,193,998	(7,331,612)	1,064,382	(34,154,577)	0	5,868,281
2023	31,390,884	117,854,847	(5,962,631)	18,553,521	(7,451,196)	520,325	(34,527,815)	(69,481)	5,903,343
2024	30,064,070	112,800,044	(5,855,003)	17,460,473	(7,340,233)	0	(34,510,214)	0	5,703,256
2025	32,326,633	121,359,942	(5,891,335)	18,964,631	(7,340,145)	1,030,614	(34,114,713)	0	6,124,572
2026	32,652,939	122,587,372	(5,906,527)	19,361,909	(7,447,420)	0	(34,846,986)	(334,341)	6,111,980
2027	32,265,800	121,140,412	(5,929,179)	19,049,944	(7,385,396)	265,068	(34,473,396)	0	6,075,966
2028	32,266,898	121,135,132	(5,873,893)	19,076,436	(7,356,853)	0	(34,539,197)	(241,836)	6,058,357
2029	31,995,178	120,122,417	(5,909,250)	18,888,713	(7,407,558)	(992)	(34,455,039)	0	6,023,863
2030	32,079,218	120,430,144	(5,877,831)	18,985,343	(7,362,669)	0	(34,532,111)	0	6,015,415
2031	30,728,411	115,330,682	(5,913,000)	18,636,169	(7,725,669)	2,055,856	(34,179,915)	(414,373)	5,567,859
2032	32,056,547	120,336,690	(5,812,864)	18,652,029	(7,555,386)	0	(33,982,144)	0	6,122,046
2033	33,640,014	126,272,513	(5,948,234)	20,309,143	(7,854,051)	969,663	(34,334,446)	845,656	6,142,745
2034	32,674,586	122,663,170	(5,867,381)	19,091,635	(7,717,902)	0	(33,822,044)	0	6,215,414
2035	32,342,824	121,438,515	(5,978,295)	19,139,527	(7,629,097)	1,273,053	(34,719,167)	1,345,597	6,076,487
Total	1,086,147,014	4,033,246,239	(222,567,599)	643,959,559	(263,487,183)	18,043,387	(1,398,318,798)	1,456,413	201,051,752

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 Power Plant (19)	Pyramid Lake (d (20)	Castaic Power Plant (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	0	118,676	0	774,253	1,117,913
1969	0	0	0	0	78,350	0	507,516	773,646
1970	0	0	0	0	136,429	0	693,842	1,103,798
1971	0	0	0	0	166,296	0	1,121,164	1,513,435
1972	0	0	(211,144)	0	237,638	0	2,648,786	3,261,922
1973	0	0	(1,057,564)	0	120,913	0	2,661,036	3,168,975
1974	0	0	(1,547,884)	0	118,582	0	3,336,872	3,919,920
1975	0	0	(2,455,461)	0	94,848	0	5,689,034	6,053,571
1976	0	0	(2,827,557)	0	141,260	0	7,886,569	8,478,786
1977	0	0	(3,734,462)	0	71,311	0	628,796	1,164,427
1978	0	0	(1,542,479)	0	179,925	0	6,979,261	7,587,308
1979	0	0	(2,773,323)	0	192,126	0	9,249,255	9,870,628
1980	0	0	(3,408,863)	0	168,458	0	9,882,560	10,425,874
1981	0	0	(2,834,322)	0	169,177	0	16,972,365	17,563,899
1982	(783,626)	0	(3,463,971)	0	168,390	0	12,859,335	13,477,272
1983	(495,041)	65,741	(3,260,764)	(3,176,515)	17,920	0	(7,537,336)	(7,452,772)
1984	(2,027,345)	0	(2,336,089)	(2,151,129)	112,679	0	(4,435,858)	(4,159,493)
1985	(5,930,176)	0	(15,698,638)	0	146,843	0	(10,322,391)	(9,861,183)
1986	(5,579,301)	0	(11,072,448)	0	297,886	0	10,799,251	11,622,736
1987	(6,304,539)	68,410	(11,562,269)	(41,897)	245,082	0	5,787,267	6,701,446
1988	(6,993,235)	54,038	(12,292,638)	(211,526)	214,519	0	5,288,073	6,239,206
1989	(8,235,085)	14,390	(14,514,469)	126,791	282,180	0	23,323,739	24,585,083
1990	(11,011,065)	0	(20,116,506)	245,180	416,832	0	46,159,453	48,154,173
1991	(3,600,495)	439,068	(6,579,194)	0	3,610	0	2,057,456	2,462,221
1992	(5,508,780)	0	(9,493,502)	(935,650)	101,665	0	(5,857,012)	(5,509,966)
1993	(4,525,955)	(13,291)	(9,266,007)	(446,527)	(111,306)	0	(24,723,671)	(24,907,971)
1994	(5,813,538)	20,518	(10,547,914)	(86,993)	206,258	0	12,537,293	13,452,216
1995	(1,934,202)	0	(4,049,615)	0	243,434	0	(443,026)	(142,956)
1996	(4,248,531)	0	(8,457,232)	0	296,170	0	15,123,290	15,870,541
1997	(4,797,589)	0	(8,727,328)	(897)	298,483	208,816	13,208,261	14,336,879
1998	(740,480)	(931,305)	(3,360,851)	(2,108,804)	(51,634)	(87,016)	(23,932,810)	(24,082,641)
1999	(5,738,474)	0	(9,655,135)	(87,667)	160,633	(12,528)	(2,377,544)	(1,737,632)
2000	(10,762,603)	0	(19,243,375)	0	718,217	2,138,496	73,265,436	75,900,877
2001	(10,689,193)	0	(19,089,046)	0	721,169	2,249,123	79,343,865	82,055,388
2002	(9,680,324)	0	(17,408,580)	0	833,337	2,605,090	103,197,770	106,328,153
2003	(8,338,987)	0	(13,587,814)	1,006,411	872,355	2,486,556	90,356,479	93,306,161
2004	(7,684,592)	0	(12,328,605)	0	770,759	2,196,967	68,313,047	70,947,581
2005	(13,453,623)	0	(21,518,827)	1,076,066	925,907	2,515,683	90,539,935	93,701,293
2006	(14,006,270)	0	(22,622,670)	83,351	906,313	2,574,590	97,333,342	100,603,896
2007	(14,852,790)	0	(23,786,480)	(150,203)	843,725	2,525,717	92,976,749	96,190,337
2008	(14,619,666)	0	(23,325,135)	0	753,823	2,256,590	78,431,959	81,307,907
2009	(14,961,980)	0	(23,857,571)	(59,862)	784,381	2,348,070	83,616,398	86,613,849
2010	(15,082,012)	0	(24,162,212)	0	825,162	2,470,148	96,881,792	100,039,704
2011	(15,097,425)	0	(24,153,868)	0	825,507	2,471,179	94,225,269	97,389,447
2012	(15,073,148)	0	(24,210,798)	527,513	857,215	2,566,099	103,352,410	106,643,299
2013	(15,576,833)	0	(25,029,485)	0	950,287	2,844,711	127,634,075	131,286,984
2014	(16,035,249)	0	(25,737,481)	0	1,027,676	3,076,379	140,889,695	144,847,229
2015	(15,956,249)	0	(25,579,750)	0	1,044,653	3,127,199	147,195,707	151,231,641
2016	(16,280,902)	0	(26,136,302)	(66,326)	1,056,369	3,162,275	158,028,120	162,121,436
2017	(16,041,010)	0	(25,780,142)	0	1,039,643	3,112,199	147,787,636	151,828,102
2018	(15,775,896)	0	(25,357,061)	1,046,334	1,072,654	3,211,022	159,197,314	163,379,021
2019	(17,169,391)	0	(27,872,932)	0	1,101,676	3,297,899	170,241,795	174,550,110
2020	(16,824,293)	0	(27,145,994)	0	1,035,730	3,100,490	153,198,364	157,261,121
2021	(16,832,141)	0	(27,188,135)	0	1,033,864	3,094,900	152,724,175	156,781,741
2022	(17,083,248)	0	(27,607,912)	(362,093)	997,058	2,984,720	144,054,992	147,968,109
2023	(17,074,100)	0	(27,592,479)	(362,791)	1,003,598	3,004,299	147,571,856	151,510,639
2024	(17,076,840)	0	(27,599,783)	42,708	1,027,676	3,076,379	135,965,413	139,922,967
2025	(17,079,485)	0	(27,602,184)	(349,352)	1,040,839	3,115,783	153,041,468	157,126,412
2026	(16,910,351)	0	(27,324,902)	0	1,049,070	3,140,423	159,718,017	163,835,264
2027	(17,107,814)	0	(27,650,043)	120,472	1,030,842	3,085,855	154,483,630	158,529,337
2028	(16,927,069)	0	(27,347,903)	0	1,039,104	3,110,590	154,998,195	159,076,330
2029	(17,077,579)	0	(27,600,687)	(31,673)	1,023,845	3,064,912	151,654,522	155,672,771
2030	(16,895,676)	0	(27,300,918)	0	1,033,385	3,093,470	153,972,258	158,027,948
2031	(15,974,053)	0	(25,730,849)	2,470,034	1,017,070	3,044,627	148,592,726	152,584,382
2032	(16,957,611)	0	(27,544,259)	0	1,040,513	3,114,808	153,443,389	157,527,055
2033	(16,164,656)	0	(26,194,743)	2,425,255	1,100,872	3,295,494	171,206,766	175,527,320
2034	(16,979,321)	0	(27,589,612)	0	1,054,570	3,156,888	157,409,493	161,548,327
2035	(17,064,166)	0	(27,723,530)	8,209,393	1,029,774	3,082,660	164,445,601	168,487,122
Total	(631,434,003)	(282,431)	(1,074,379,696)	6,749,603	39,532,271	102,911,562	4,795,848,618	4,947,451,548

Table B-13

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)			Application of Oroville Power Revenues to:		Planning and Pre-operating Costs (a (f	Total
	Capital Costs (a (1)	Capital Cost Credits (b (2)	Operating Costs (c (3)	Capital Costs (d (4)	Operating Costs (e (5)	(6)	(7)
1952	171,322	0	0	0	0	0	171,322
1953	312,190	0	0	0	0	0	312,190
1954	308,624	0	0	0	0	0	308,624
1955	194,645	0	0	0	0	0	194,645
1956	1,357,077	0	0	0	0	0	1,357,077
1957	6,210,709	0	0	0	0	0	6,210,709
1958	9,510,916	0	0	0	0	0	9,510,916
1959	11,390,586	0	0	0	0	0	11,390,586
1960	14,456,356	(4,850,000)	0	0	0	0	9,606,356
1961	18,682,616	(431,527)	0	0	0	0	18,251,089
1962	9,012,960	(479,280)	0	0	0	0	8,533,680
1963	72,965,728	(478,743)	(14,000)	0	0	0	72,472,985
1964	62,493,755	(751,330)	(14,000)	0	0	107,780	61,836,205
1965	70,920,988	(763,541)	(14,000)	0	0	551,850	70,695,297
1966	125,265,788	(748,649)	(14,000)	0	0	1,081,023	125,584,162
1967	94,374,172	(812,145)	(13,446)	0	0	1,189,212	94,737,793
1968	39,889,088	(431,574)	1,303,821	(951,000)	0	793,399	40,603,734
1969	5,279,981	(259,015)	2,890,772	(11,007,000)	0	601,867	(2,493,395)
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)	12,851,158	(14,650,000)	(1,500,000)	2,131,286	6,481,130
1979	9,030,801	0	9,547,014	(14,650,000)	(1,500,000)	2,131,884	4,559,699
1980	10,372,763	0	13,258,298	(14,650,000)	(1,500,000)	3,638,851	11,119,912
1981	11,194,479	0	10,326,538	(14,650,000)	(1,500,000)	4,597,474	9,968,491
1982	16,634,428	0	16,154,872	(14,650,000)	(1,500,000)	4,594,682	21,233,982
1983	12,037,206	0	22,253,515	(34,705,000)	(8,735,000)	3,751,993	(5,397,286)
1984	8,706,748	0	22,700,224	(14,650,000)	(10,348,000)	2,979,126	9,388,098
1985	11,921,382	0	23,464,019	(14,650,000)	(8,079,000)	2,069,024	14,725,425
1986	20,464,281	0	26,479,379	(14,650,000)	(9,107,000)	1,602,419	24,789,079
1987	30,814,266	0	23,514,665	(14,650,000)	(9,451,000)	1,762,179	31,990,110
1988	31,587,615	0	26,003,911	(14,650,000)	(8,677,000)	1,808,899	36,073,425
1989	10,125,424	0	28,442,946	(14,650,000)	(8,104,000)	2,678,007	18,492,377
1990	27,882,191	0	37,255,751	(14,650,000)	(8,497,000)	1,436,712	43,427,654
1991	35,966,870	0	76,428,061	(14,650,000)	(9,487,000)	1,727,664	89,985,595
1992	27,622,044	0	32,284,164	(14,650,000)	(8,526,000)	1,707,822	38,438,030
1993	21,156,123	0	36,071,890	(14,650,000)	(8,768,000)	1,708,490	35,518,503
1994	13,755,771	0	39,332,454	(14,650,000)	(7,484,000)	2,134,392	33,088,617
1995	14,253,704	0	44,519,764	(14,650,000)	(7,041,000)	2,042,481	39,124,949
1996	10,874,166	0	48,829,161	(14,650,000)	(7,288,000)	2,448,692	40,214,019
1997	14,362,766	0	49,900,872	(14,650,000)	(7,009,000)	1,699,730	44,304,368
1998	4,274,851	0	52,837,209	(14,650,000)	(8,155,000)	1,193,198	35,500,258
1999	5,824,845	0	52,518,986	(14,650,000)	(9,198,000)	9,863	34,505,694
2000	25,427,195	0	66,430,338	(14,650,000)	(7,893,620)	3,796,000	73,109,913
2001	24,939,403	0	64,575,939	(14,650,000)	(7,628,250)	3,961,000	71,198,092
2002	11,401,448	0	62,514,346	(14,650,000)	(7,153,092)	4,179,000	56,291,702
2003	8,455,518	0	57,328,614	(14,650,000)	(7,153,092)	3,679,000	47,660,040
2004	7,165,944	0	59,448,075	(14,650,000)	(7,153,092)	3,179,000	47,989,927
2005	1,102,944	0	58,038,481	(14,650,000)	(7,153,092)	3,129,000	40,467,333
2006	661,145	0	49,537,020	(14,650,000)	(7,153,092)	3,129,000	31,524,073
2007	661,145	0	55,029,811	(14,650,000)	(7,153,092)	3,129,000	37,016,864
2008	377,345	0	53,064,177	(14,650,000)	(7,153,092)	3,129,000	34,767,430
2009	377,345	0	53,051,181	(14,650,000)	(7,153,092)	3,129,000	34,754,434
2010	377,345	0	52,314,484	(14,650,000)	(7,153,092)	3,129,000	34,017,737
2011	377,345	0	51,423,072	(14,650,000)	(7,153,092)	0	29,997,325
2012	377,345	0	50,071,996	(14,650,000)	(7,153,092)	0	28,646,249
2013	377,345	0	52,866,033	(14,650,000)	(7,153,092)	0	31,440,286
2014	377,345	0	51,524,539	(14,650,000)	(7,153,092)	0	30,098,792
2015	377,345	0	49,736,170	(14,650,000)	(7,153,092)	0	28,310,423
2016	377,345	0	53,061,094	(14,650,000)	(7,153,092)	0	31,635,347
2017	377,345	0	52,321,242	(14,650,000)	(7,153,092)	0	30,895,495
2018	377,345	0	52,714,978	(14,650,000)	(7,153,092)	0	31,289,231
2019	377,345	0	51,694,957	(14,650,000)	(7,153,092)	0	30,269,210
2020	377,345	0	49,479,979	(14,650,000)	(7,153,092)	0	28,054,232
2021	377,345	0	53,210,029	(14,650,000)	(7,153,092)	0	31,784,282
2022	377,345	0	52,109,595	(14,650,000)	(7,153,092)	0	30,683,848
2023	377,345	0	49,445,466	(14,650,000)	(7,153,092)	0	28,019,719
2024	377,345	0	50,290,387	(14,650,000)	(7,153,092)	0	28,864,640
2025	377,345	0	54,343,681	(14,650,000)	(7,153,092)	0	32,917,934
2026	377,345	0	51,998,884	(14,650,000)	(7,153,092)	0	30,573,137
2027	377,345	0	49,052,841	(14,650,000)	(7,153,092)	0	27,627,094
2028	377,345	0	49,484,383	(14,650,000)	(7,153,092)	0	28,058,636
2029	377,345	0	54,887,762	(14,650,000)	(7,153,092)	0	33,462,015
2030	377,345	0	51,080,681	(14,650,000)	(7,153,092)	0	29,654,934
2031	377,345	0	49,378,677	(14,650,000)	(7,153,092)	0	27,952,930
2032	377,345	0	48,962,110	(14,650,000)	(7,153,092)	0	27,536,363
2033	377,345	0	53,448,491	(14,650,000)	(7,153,092)	0	32,022,744
2034	377,345	0	50,539,177	(14,650,000)	(7,153,092)	0	29,113,430
2035	377,345	0	51,040,761	(14,650,000)	(7,153,092)	0	29,615,014
Total	1,048,217,130	(11,528,320)	2,679,230,475	(1,002,213,000)	(422,180,998)	94,574,918	2,386,100,205

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 (1999) 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	346
1953	0	0	0	323	479	1,808	2,610	336	619	955
1954	0	0	0	819	1,306	5,150	7,275	421	777	1,198
1955	0	0	0	977	1,570	6,297	8,844	211	389	601
1956	0	0	0	8,844	14,459	63,816	87,119	226	418	644
1957	15,199	11,436	26,635	21,564	35,240	649,596	706,400	290	535	825
1958	33,420	16,591	50,011	67,764	71,717	733,414	872,895	719	1,326	2,045
1959	20,697	6,591	27,288	154,255	143,730	493,050	791,035	10,635	69,137	79,772
1960	9,097	8,830	17,927	296,492	275,610	1,018,661	1,590,763	15,252	99,789	115,041
1961	6,950	7,445	14,395	853,506	802,675	1,914,709	3,570,890	10,158	36,672	46,831
1962	(194)	(926)	(1,120)	545,123	615,141	1,686,041	2,846,305	17,272	39,553	56,825
1963	1,319	1,111	2,430	657,426	1,281,271	3,243,838	5,182,535	68,813	140,827	209,640
1964	38,393	35,466	73,859	712,650	1,747,783	7,251,800	9,712,233	138,611	281,998	420,609
1965	198,833	62,221	261,054	360,779	606,025	3,414,457	4,381,261	250,682	497,107	747,789
1966	461,619	49,917	511,536	592,714	592,598	2,245,215	3,430,527	587,648	1,116,928	1,704,576
1967	1,569,498	40,379	1,609,877	796,995	803,951	2,401,862	4,002,808	936,119	1,762,153	2,698,273
1968	859,613	61,691	921,304	736,470	696,075	1,997,924	3,430,469	351,094	675,151	1,026,245
1969	74,388	59,318	133,706	269,698	293,275	764,950	1,327,923	76,957	164,566	241,523
1970	43,361	67,877	111,238	58,676	61,200	135,569	255,445	47,884	109,211	157,095
1971	26,763	34,052	60,815	12,086	18,227	84,089	114,402	28,635	80,711	109,346
1972	19,643	18,905	38,548	12,293	12,763	63,610	88,666	19,288	50,228	69,516
1973	56,510	30,874	87,384	10,494	12,136	39,380	62,010	23,009	56,177	79,186
1974	165,830	65,832	231,662	15,722	24,402	73,119	113,243	25,035	61,380	86,415
1975	91,824	89,234	181,058	16,730	15,806	41,394	73,930	14,739	61,414	76,153
1976	57,765	83,651	141,416	34,004	34,663	109,610	178,277	33,633	130,430	164,063
1977	64,167	80,147	144,314	46,229	45,115	133,375	224,719	108,319	264,711	373,029
1978	69,319	81,717	151,036	71,234	66,008	174,898	312,140	21,413	103,817	125,230
1979	191,273	282,907	474,180	45,468	42,943	110,665	199,076	22,940	125,668	148,608
1980	264,433	386,006	650,439	134,522	124,352	304,614	563,488	103,258	462,895	566,153
1981	227,606	383,086	610,692	(33,738)	(29,856)	(65,637)	(129,231)	(15,416)	(135,242)	(150,658)
1982	549,164	870,611	1,419,775	7,876	8,321	27,065	43,262	4,101	(58,883)	(54,781)
1983	1,254,900	1,433,061	2,687,961	138,413	131,515	339,246	609,174	32,195	110,286	142,481
1984	2,547,878	2,750,040	5,297,918	152,992	140,971	351,921	645,884	35,447	107,721	143,167
1985	7,143,123	6,443,613	13,586,736	19,776	19,245	53,491	92,512	17,423	78,894	96,317
1986	10,565,937	16,926,630	27,492,567	32,034	31,581	88,070	151,685	44,134	306,450	350,583
1987	7,979,832	12,599,507	20,579,339	50,153	48,675	138,959	237,787	126,993	1,342,113	1,469,106
1988	2,312,909	4,343,513	6,656,422	116,181	112,294	302,461	530,936	156,480	1,479,557	1,636,037
1989	1,224,538	1,553,352	2,777,890	108,320	102,804	260,092	471,216	152,168	1,210,932	1,363,100
1990	443,031	824,087	1,267,118	224,355	224,253	625,370	1,073,978	222,268	1,559,722	1,781,990
1991	100,008	89,446	189,454	413,820	383,728	947,105	1,744,653	298,727	2,185,868	2,484,596
1992	57,132	62,180	119,312	182,446	170,165	442,523	795,134	357,713	3,511,613	3,869,325
1993	122,500	128,720	251,220	129,534	125,486	342,831	597,851	1,091,660	12,075,374	13,167,034
1994	71,350	83,353	154,703	46,229	58,221	230,057	334,507	4,029,699	46,624,459	50,654,158
1995	30,657	29,328	59,985	97,936	97,180	257,763	452,879	12,778,076	154,732,214	167,510,290
1996	20,342	19,145	39,487	50,022	48,209	127,858	226,089	11,762,813	144,829,646	156,592,459
1997	20,151	107,906	128,057	82,872	79,247	210,115	372,234	3,292,003	37,892,294	41,184,296
1998	17,432	21,583	39,015	27,325	24,142	63,107	114,574	877,162	10,715,277	11,592,439
1999	63,863	100,655	164,518	63,821	63,123	179,965	306,909	1,268,793	13,860,176	15,128,969
2000	0	0	0	105,103	96,097	228,989	430,189	1,407,643	12,003,681	13,411,324
2001	0	0	0	17,878	16,346	38,951	73,175	251,948	1,890,078	2,142,025
2002	0	0	0	7,641	6,987	16,649	31,277	3,155	5,821	8,976
2003	0	0	0	7,641	6,987	16,649	31,277	3,155	5,821	8,976
2004	0	0	0	6,758	6,179	14,725	27,662	3,035	5,599	8,633
2005	0	0	0	6,758	6,179	14,725	27,662	3,035	5,599	8,633
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	39,092,073	50,351,088	89,443,161	8,596,086	10,418,713	34,416,371	53,431,170	41,118,127	452,739,879	493,858,006

Note: Allocated capital costs as a result of permanent water transfers under Monterey are not reflected on this Table.

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									Total (20)
				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)	
1952	389	20	58	938	119	9,129	20	12	785	11,470
1953	1,076	53	161	2,887	345	27,383	55	33	2,157	34,150
1954	1,350	68	201	3,373	417	32,369	69	43	2,718	40,608
1955	677	34	101	1,497	197	14,721	35	23	1,371	18,656
1956	726	34	108	2,702	273	24,255	35	25	1,416	29,574
1957	932	38	139	6,048	494	49,932	39	29	1,707	59,358
1958	2,308	102	344	14,374	1,153	119,049	104	61	4,368	141,863
1959	7,384	364	2,517	26,218	2,597	253,891	372	381	14,757	308,481
1960	12,940	630	3,666	34,054	4,155	352,166	644	498	25,696	434,449
1961	21,848	1,063	3,954	51,407	6,500	538,707	1,087	598	43,377	668,541
1962	49,320	2,410	7,867	94,933	13,834	1,017,146	2,465	1,879	98,141	1,287,995
1963	208,757	10,687	32,172	364,014	55,715	3,934,636	10,932	5,990	425,330	5,048,233
1964	328,286	16,961	64,890	600,152	88,904	6,636,279	17,350	11,942	672,013	8,436,777
1965	538,215	27,481	117,996	1,098,999	152,930	11,999,892	28,116	21,802	1,095,126	15,080,557
1966	1,107,757	52,586	279,172	2,218,832	339,222	24,857,487	53,789	38,891	2,173,090	31,120,826
1967	852,537	39,537	445,562	2,012,744	286,990	23,629,026	40,444	34,775	1,653,429	28,995,044
1968	198,739	9,739	166,267	1,104,132	70,086	11,544,942	9,962	12,238	396,075	13,512,180
1969	94,436	4,793	35,473	616,516	27,216	6,416,147	4,903	7,302	191,574	7,398,360
1970	54,344	2,720	21,686	414,659	15,520	4,145,046	2,782	3,999	109,470	4,770,226
1971	25,462	1,291	12,094	190,552	7,114	1,622,274	1,320	540	51,618	1,912,265
1972	11,589	589	8,354	82,886	3,409	723,623	602	343	23,526	854,921
1973	6,657	335	10,201	39,973	1,980	458,527	343	221	13,448	531,685
1974	9,478	469	11,044	45,420	2,766	483,866	479	326	18,979	572,827
1975	13,329	677	5,246	36,467	3,710	382,743	692	425	27,048	470,337
1976	17,506	837	12,615	53,085	5,621	654,026	856	1,152	34,455	780,153
1977	9,672	436	47,790	36,478	3,753	886,672	446	494	18,497	1,004,238
1978	23,499	(30,406)	6,178	54,219	6,579	575,169	1,209	1,402	47,446	685,295
1979	25,051	1,295	5,664	53,866	6,610	559,746	1,325	1,862	51,293	706,712
1980	144,980	(4,617)	31,160	321,890	38,126	3,211,810	7,682	7,144	297,215	4,055,390
1981	(5,427)	(15,464)	200	(44,773)	(1,223)	(385,275)	(296)	1,752	(11,324)	(461,830)
1982	49,916	2,584	6,600	83,283	13,142	654,692	2,638	1,252	102,287	916,394
1983	52,429	(35,295)	12,125	110,465	13,872	1,073,500	2,769	1,327	107,337	1,338,529
1984	86,345	4,474	14,303	154,799	22,764	1,617,225	4,572	2,678	177,020	2,084,180
1985	25,435	1,311	5,649	47,055	6,766	484,485	1,341	1,176	52,013	625,231
1986	38,309	(41,067)	9,862	71,661	10,320	796,097	2,009	778	78,142	966,111
1987	28,769	1,476	7,004	55,537	7,969	616,845	1,509	1,491	58,679	779,279
1988	52,329	2,831	17,078	70,572	12,049	909,046	2,894	4,620	109,713	1,181,132
1989	156,099	8,019	27,551	352,103	42,943	3,834,481	8,201	12,134	318,604	4,760,135
1990	292,442	15,146	50,378	553,575	87,220	6,095,860	15,491	22,734	599,401	7,732,247
1991	349,861	18,126	60,518	581,565	91,882	6,457,662	18,539	23,509	717,211	8,318,873
1992	126,135	6,451	28,073	242,100	34,622	2,717,139	6,598	10,896	256,871	3,428,885
1993	86,329	4,386	30,293	175,109	23,896	2,064,038	4,485	4,709	175,216	2,568,461
1994	64,974	3,334	23,941	124,990	17,688	1,493,207	3,409	2,184	132,531	1,866,258
1995	83,115	(993)	72,766	168,020	24,428	2,475,606	4,363	2,831	169,616	2,999,752
1996	27,802	(61,903)	52,032	69,292	8,862	1,237,839	1,447	1,600	56,482	1,393,453
1997	136,814	7,058	48,790	242,091	36,498	2,958,710	7,212	3,722	279,844	3,720,739
1998	76,751	(120,692)	23,980	132,594	20,191	1,580,988	4,061	1,279	157,306	1,876,458
1999	91,170	4,715	26,894	157,221	24,165	1,860,317	4,819	3,718	186,720	2,359,739
2000	230,595	11,972	35,494	373,183	60,187	4,137,067	12,230	3,159	473,222	5,337,109
2001	153,447	7,968	23,855	246,839	40,034	2,729,380	8,139	2,119	314,931	3,526,712
2002	3,342	174	1,508	5,837	872	70,580	177	327	6,859	89,676
2003	3,342	174	1,508	5,837	872	70,580	177	327	6,859	89,676
2004	2,956	153	1,450	5,163	771	63,753	157	289	6,067	80,759
2005	2,956	153	1,450	4,746	771	63,753	157	289	6,067	80,342
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	5,985,479	(34,683)	1,915,982	13,572,179	1,747,896	150,838,234	305,255	265,330	12,033,799	186,629,471

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	3,158	1,042	850	254	1,402	70	1,695	418	6,079	1,550
1953	10,026	3,327	2,668	799	4,401	222	5,318	1,328	19,058	4,852
1954	12,742	4,193	3,465	1,031	5,714	285	6,908	1,691	24,608	6,290
1955	5,411	1,881	1,374	401	2,267	115	2,756	715	9,229	2,377
1956	9,775	3,590	2,196	612	3,622	191	4,449	1,267	13,138	3,438
1957	26,306	9,255	6,343	1,816	10,461	540	12,767	3,450	40,646	10,534
1958	49,204	17,599	11,581	3,290	19,099	991	23,360	6,414	72,708	18,898
1959	70,247	29,740	15,869	4,616	26,171	1,347	31,759	9,030	98,596	25,519
1960	84,552	38,760	22,068	6,797	36,395	1,547	43,260	10,772	147,170	37,469
1961	126,542	54,262	34,613	12,530	57,086	2,245	63,709	16,437	236,164	57,707
1962	198,558	85,352	43,719	13,861	72,102	3,344	84,709	24,943	253,435	64,330
1963	580,138	255,252	116,797	33,149	192,624	9,828	234,926	73,256	610,277	160,624
1964	1,094,365	501,858	209,462	55,445	345,446	18,442	429,605	137,769	1,026,066	276,118
1965	1,908,076	947,523	385,533	103,757	635,825	32,819	786,986	244,587	1,913,090	512,862
1966	3,960,302	2,150,972	812,655	215,858	1,340,235	69,325	1,664,584	517,269	3,943,586	1,062,417
1967	4,976,538	4,100,531	1,077,422	296,069	1,776,892	88,301	2,182,240	653,250	5,821,681	1,550,239
1968	5,924,474	3,998,942	1,350,742	368,156	2,227,646	107,350	2,738,009	783,940	7,982,824	2,122,940
1969	5,822,708	3,079,426	1,690,259	539,851	2,787,631	121,303	3,256,507	865,455	10,898,185	2,769,647
1970	5,032,959	3,277,778	2,050,788	695,345	3,382,251	106,381	3,872,367	736,775	13,795,809	3,457,109
1971	2,577,507	2,146,954	1,071,523	338,581	1,767,179	48,337	2,087,223	347,057	8,137,053	1,987,120
1972	973,436	283,257	331,759	92,079	547,138	19,134	668,550	134,360	2,691,137	697,957
1973	354,407	914,303	158,579	82,223	261,557	6,304	238,094	46,102	1,760,570	403,582
1974	451,450	280,861	259,175	74,113	427,433	8,143	518,453	59,145	1,617,394	425,927
1975	253,438	246,492	193,632	52,821	319,337	4,954	392,110	33,995	1,533,664	407,913
1976	237,539	255,238	136,751	37,235	225,529	4,245	277,807	31,002	962,280	255,901
1977	199,554	371,469	91,384	25,858	150,711	3,757	183,609	26,834	591,445	155,537
1978	302,111	470,176	78,573	22,226	129,584	5,233	157,815	38,654	428,989	111,769
1979	357,678	938,985	81,807	21,795	134,915	5,965	166,931	44,410	403,569	108,408
1980	1,867,517	1,777,294	423,755	113,166	698,855	32,435	864,104	240,899	2,040,757	548,085
1981	(158,728)	610,795	(47,102)	(8,865)	(77,678)	(2,576)	(102,568)	(19,588)	(143,875)	(43,557)
1982	1,557,934	861,928	298,770	78,903	492,728	26,237	613,587	196,672	1,421,407	388,261
1983	2,062,512	521,349	396,033	115,678	653,134	34,699	803,945	259,939	2,126,313	581,672
1984	1,518,361	295,783	297,559	85,097	490,731	27,272	606,124	188,562	1,546,628	423,408
1985	896,226	158,810	217,115	62,532	358,064	13,104	441,299	107,533	1,115,498	304,903
1986	841,555	104,860	221,194	58,152	364,790	9,038	454,702	93,309	1,048,625	286,302
1987	333,052	105,625	166,099	43,992	273,928	5,566	340,485	40,716	783,725	213,202
1988	259,234	174,155	65,831	22,723	108,570	3,384	128,339	26,743	429,498	113,644
1989	1,045,999	434,394	323,138	97,036	532,920	16,777	649,616	125,344	1,375,722	372,048
1990	678,891	374,684	332,742	97,833	548,758	7,349	672,708	67,285	1,510,531	409,926
1991	836,289	403,999	368,161	121,169	607,171	12,043	735,440	93,203	1,983,681	541,395
1992	635,778	358,062	271,351	131,461	447,514	9,598	502,721	77,075	2,095,739	574,032
1993	636,503	333,072	222,813	171,213	367,468	10,231	354,433	74,234	3,850,166	1,047,323
1994	469,592	166,574	133,057	93,954	219,440	7,292	219,442	53,483	2,349,647	638,296
1995	461,482	293,969	133,003	78,469	219,351	7,461	233,024	54,732	1,959,300	531,040
1996	301,720	207,608	110,930	45,068	182,946	4,918	212,721	36,054	3,629,024	973,333
1997	442,099	251,117	104,053	24,810	171,604	7,450	215,923	54,854	1,485,255	397,927
1998	244,937	207,273	64,398	41,618	106,207	4,165	109,980	30,877	1,126,239	305,601
1999	273,676	174,853	87,969	39,511	145,079	4,865	165,292	35,898	853,235	230,213
2000	440,590	388,527	168,973	42,893	278,669	7,476	350,204	54,072	777,859	213,507
2001	277,776	123,054	50,023	12,772	82,498	4,648	104,072	34,887	228,337	62,810
2002	17,579	8,670	3,180	804	5,245	294	6,587	2,208	14,223	3,906
2003	17,579	8,670	3,180	804	5,245	294	6,587	2,208	14,223	3,906
2004	15,548	7,838	2,813	711	4,639	260	5,826	1,953	12,579	3,455
2005	15,570	7,847	2,817	712	4,645	261	5,834	1,956	12,597	3,459
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	51,592,472	32,829,828	14,663,442	4,672,784	24,183,174	925,259	28,836,933	6,785,433	98,685,383	25,827,131

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	962	69,020	370	86,870	0	0	0	0	59	99,352
1953	3,011	217,634	1,187	273,831	0	0	0	0	264	311,810
1954	3,904	279,967	1,496	352,294	0	0	0	0	766	402,141
1955	1,474	111,602	670	140,272	0	0	0	0	969	169,342
1956	2,127	179,335	1,299	225,039	0	0	0	0	9,172	351,548
1957	6,526	516,050	3,367	648,061	0	0	0	0	23,172	1,464,451
1958	11,701	945,684	6,390	1,186,919	0	0	2	2	32,888	2,286,623
1959	15,815	1,364,298	9,894	1,702,901	0	0	14	14	57,918	2,967,409
1960	23,307	1,914,521	12,798	2,379,416	0	0	28	28	123,202	4,660,826
1961	36,153	3,212,125	18,770	3,928,343	0	0	10	10	316,220	8,545,230
1962	40,012	3,543,471	29,069	4,456,905	0	0	32	32	228,202	8,875,144
1963	99,266	11,185,928	86,807	13,638,872	0	0	51	51	528,496	24,610,257
1964	170,012	18,065,455	164,709	22,494,752	0	0	7,791	7,791	590,034	41,736,055
1965	316,082	33,763,577	307,475	41,858,192	0	0	3,139	3,139	332,680	62,664,672
1966	654,194	74,485,027	681,898	91,558,322	0	0	(48)	(48)	783,728	129,109,467
1967	958,406	130,599,417	1,279,076	155,360,062	0	0	47	47	1,479,421	194,145,532
1968	1,314,841	147,502,290	1,360,687	177,782,841	0	0	51,573	51,573	1,254,192	197,978,804
1969	1,726,891	140,096,646	1,085,026	174,739,535	0	0	234,232	234,232	398,183	184,473,462
1970	2,160,122	161,983,078	1,147,609	201,698,371	0	0	16,227	16,227	74,028	207,082,630
1971	1,237,573	133,903,316	738,822	156,388,245	0	0	27,204	27,204	12,457	158,624,734
1972	434,507	43,931,880	66,878	50,872,072	0	0	9	9	13,182	51,936,914
1973	256,711	39,723,010	290,020	44,495,462	0	0	25	25	8,099	45,263,851
1974	264,349	18,896,593	86,362	23,369,398	0	0	45	45	28,570	24,402,160
1975	253,838	16,732,939	83,975	20,509,108	0	0	21	21	8,226	21,318,833
1976	158,850	13,545,451	84,623	16,212,451	0	0	51	51	16,486	17,492,897
1977	96,517	11,769,352	110,833	13,776,860	0	0	28	28	21,181	15,544,369
1978	69,152	15,781,696	174,876	17,770,854	0	0	38	38	28,876	19,073,469
1979	66,847	27,627,424	343,361	30,302,095	0	0	23	23	26,668	31,857,362
1980	337,811	59,493,774	641,586	69,080,038	0	0	26	26	59,169	74,974,703
1981	-26,356	15,661,179	224,257	15,865,338	0	0	34	34	(6,746)	15,727,599
1982	238,792	30,873,857	316,107	37,365,183	0	0	11	11	16,086	39,705,930
1983	357,812	25,056,047	187,121	33,156,254	0	0	19	19	72,225	38,006,643
1984	260,327	16,317,441	103,160	22,160,453	0	0	26	26	83,252	30,414,880
1985	187,454	10,236,155	56,162	14,154,855	0	0	29	29	16,338	28,572,018
1986	176,057	8,365,310	34,777	12,058,671	0	0	31	31	16,248	41,035,896
1987	131,163	6,955,356	36,142	9,429,051	0	0	32	32	29,062	32,523,656
1988	70,260	6,626,545	57,117	8,086,043	0	0	55	55	50,083	18,140,708
1989	227,772	18,531,680	153,200	23,885,646	0	0	44	44	43,324	33,301,355
1990	251,317	17,444,658	125,508	22,522,190	0	0	63	63	96,446	34,474,032
1991	331,963	20,867,871	133,280	27,035,665	0	0	54	54	150,068	39,923,363
1992	351,889	21,237,995	117,393	26,810,608	0	0	42	42	80,981	35,104,287
1993	647,331	29,508,265	106,041	37,329,093	0	0	30	30	59,395	53,973,084
1994	395,282	16,427,926	51,284	21,225,269	0	0	14	14	34,278	74,269,187
1995	328,923	16,102,935	72,448	20,476,137	0	0	3	3	42,442	191,541,488
1996	610,364	23,269,864	49,589	29,634,139	0	0	0	0	21,451	187,907,078
1997	249,066	13,583,429	72,838	17,060,425	0	0	3	3	35,078	62,500,832
1998	189,476	11,442,573	67,290	13,940,634	0	0	7	7	11,242	27,574,369
1999	142,230	8,940,278	54,562	11,147,661	0	0	2	2	26,923	29,134,721
2000	131,120	14,970,484	135,068	17,959,442	0	0	0	0	35,362	37,173,426
2001	38,499	4,193,713	40,781	5,253,870	0	0	0	0	6,258	11,002,040
2002	2,398	263,001	2,567	330,662	0	0	0	0	2,586	463,177
2003	2,398	263,001	2,567	330,662	0	0	0	0	2,586	463,177
2004	2,121	232,608	2,270	292,621	0	0	0	0	2,287	411,962
2005	2,124	232,941	2,274	293,037	0	0	0	0	2,287	411,961
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	16,020,743	1,449,045,672	11,023,736	1,765,091,990	0	0	341,067	341,067	7,386,050	2,596,180,915

e) Costs from Table B-10 allocated to MWD 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	105,103	105,763	365,150	576,016	0	0	0
1964	0	0	0	138,612	171,070	530,490	840,172	6,059	20,500	26,559
1965	0	0	0	174,936	260,156	900,118	1,335,210	11,426	31,741	43,167
1966	18,080	0	18,080	193,325	291,045	1,074,154	1,558,524	20,183	49,661	69,843
1967	41,609	0	41,609	223,536	321,250	1,188,594	1,733,380	37,976	84,159	122,136
1968	121,607	0	121,607	264,159	362,228	1,311,018	1,937,405	51,724	111,313	163,037
1969	165,422	0	165,422	301,698	397,707	1,412,853	2,112,258	55,046	118,838	173,884
1970	169,213	0	169,213	315,444	412,655	1,451,843	2,179,942	56,687	123,018	179,705
1971	171,423	0	171,423	318,435	415,775	1,458,753	2,192,963	57,679	125,911	183,590
1972	172,787	0	172,787	319,051	416,704	1,463,039	2,198,794	58,253	128,392	186,645
1973	173,789	31,399	205,188	319,678	417,354	1,466,281	2,203,313	58,529	129,648	188,177
1974	176,669	32,973	209,642	320,212	417,973	1,468,289	2,206,474	58,720	130,699	189,419
1975	185,121	36,329	221,450	321,014	419,217	1,472,016	2,212,247	58,969	131,932	190,901
1976	189,802	40,877	230,679	321,867	420,022	1,474,125	2,216,014	165,716	330,613	496,329
1977	192,746	45,141	237,887	323,600	421,789	1,479,712	2,225,101	167,430	337,261	504,691
1978	196,017	49,226	245,243	325,956	424,089	1,486,510	2,236,555	172,951	350,753	523,705
1979	199,550	53,391	252,941	329,587	427,453	1,495,425	2,252,465	174,043	356,045	530,088
1980	209,299	67,811	277,110	331,904	429,642	1,501,066	2,262,612	175,212	362,450	537,662
1981	222,777	87,486	310,263	338,761	435,980	1,516,592	2,291,333	180,475	386,044	566,519
1982	234,379	107,012	341,391	337,041	434,459	1,513,247	2,284,747	179,689	379,151	558,840
1983	262,370	151,387	413,757	337,443	434,883	1,514,626	2,286,952	179,898	376,150	556,048
1984	326,333	224,431	550,764	344,498	441,586	1,531,918	2,318,002	181,539	381,771	563,310
1985	456,199	364,602	820,801	352,296	448,771	1,549,855	2,350,922	183,346	387,262	570,608
1986	820,287	693,036	1,513,323	353,304	449,752	1,552,582	2,355,638	184,234	391,283	575,517
1987	1,361,763	1,560,480	2,922,243	354,946	451,371	1,557,095	2,363,412	186,496	406,988	593,483
1988	1,773,045	2,209,860	3,982,905	357,530	453,879	1,564,257	2,375,666	193,041	476,160	669,201
1989	1,892,969	2,435,072	4,328,041	363,554	459,702	1,579,940	2,403,196	201,154	552,875	754,030
1990	1,956,864	2,516,123	4,472,987	369,206	465,066	1,593,511	2,427,783	209,094	616,060	825,154
1991	1,980,135	2,559,409	4,539,544	380,991	476,845	1,626,359	2,484,195	220,769	697,986	918,756
1992	1,985,424	2,564,141	4,549,565	402,880	497,143	1,676,457	2,576,480	236,571	813,608	1,050,179
1993	1,988,469	2,567,454	4,555,923	412,602	506,210	1,700,037	2,618,849	255,632	1,000,731	1,256,363
1994	1,995,047	2,574,367	4,569,414	419,558	512,949	1,718,448	2,650,955	314,257	1,649,212	1,963,469
1995	1,998,911	2,578,880	4,577,791	422,061	516,102	1,730,905	2,669,068	532,445	4,173,689	4,706,133
1996	2,000,585	2,580,482	4,581,067	427,410	521,409	1,744,982	2,693,801	1,230,323	12,624,429	13,854,752
1997	2,001,706	2,581,537	4,583,243	430,167	524,066	1,752,029	2,706,262	1,878,644	20,606,886	22,485,530
1998	2,002,828	2,587,542	4,590,370	434,779	528,476	1,763,722	2,726,977	2,061,844	22,715,597	24,777,441
1999	2,003,808	2,588,755	4,592,563	436,315	529,833	1,767,270	2,733,418	2,111,158	23,318,009	25,429,167
2000	2,007,437	2,594,475	4,601,912	1,089,445	533,421	1,777,497	3,400,363	2,183,262	24,105,664	26,288,926
2001	2,007,437	2,594,475	4,601,912	1,095,486	538,944	1,790,660	3,425,090	2,264,173	24,795,632	27,059,805
2002	2,007,437	2,594,475	4,601,912	1,097,007	539,895	1,792,926	3,429,828	2,278,831	24,905,591	27,184,421
2003	2,007,437	2,594,475	4,601,912	1,097,658	540,307	1,793,907	3,431,872	2,279,016	24,905,934	27,184,950
2004	2,007,437	2,594,475	4,601,912	1,098,317	540,724	1,794,901	3,433,942	2,279,205	24,906,281	27,185,486
2005	2,007,437	2,594,475	4,601,912	1,098,911	541,099	1,795,793	3,435,803	2,279,389	24,906,621	27,186,009
2006	2,007,437	2,594,475	4,601,912	1,099,511	541,479	1,796,699	3,437,689	2,279,389	24,906,621	27,186,009
2007	2,007,437	2,594,475	4,601,912	1,099,511	541,479	1,796,699	3,437,689	2,279,389	24,906,621	27,186,009
2008	2,007,437	2,594,475	4,601,912	1,099,511	541,479	1,796,699	3,437,689	2,279,389	24,906,621	27,186,009
2009	2,007,437	2,594,475	4,601,912	1,099,511	541,479	1,796,699	3,437,689	2,279,389	24,906,621	27,186,009
2010	2,007,437	2,594,475	4,601,912	1,099,511	541,479	1,796,699	3,437,689	2,279,389	24,906,621	27,186,009
2011	2,007,437	2,594,475	4,601,912	1,099,511	541,479	1,796,699	3,437,689	2,279,389	24,906,621	27,186,009
2012	2,007,437	2,594,475	4,601,912	1,099,511	541,479	1,796,699	3,437,689	2,279,389	24,906,621	27,186,009
2013	2,007,437	2,594,475	4,601,912	937,733	435,715	1,431,549	2,804,997	2,279,389	24,906,621	27,186,009
2014	2,007,437	2,594,475	4,601,912	868,715	370,408	1,266,209	2,505,332	2,273,330	24,886,121	27,159,451
2015	2,007,437	2,594,475	4,601,912	792,747	281,323	896,581	1,970,651	2,267,963	24,874,879	27,142,842
2016	1,989,357	2,594,475	4,583,832	752,005	250,434	722,545	1,724,984	2,259,206	24,856,960	27,116,166
2017	1,965,828	2,594,475	4,560,303	669,137	220,229	608,105	1,497,471	2,241,412	24,822,461	27,063,873
2018	1,885,830	2,594,475	4,480,305	529,114	179,251	485,681	1,194,046	2,227,665	24,795,308	27,022,972
2019	1,842,015	2,594,475	4,436,490	407,310	143,772	383,846	934,928	2,224,343	24,787,782	27,012,125
2020	1,838,224	2,594,475	4,432,699	366,809	128,823	344,856	840,488	2,222,702	24,783,603	27,006,304
2021	1,836,014	2,594,475	4,430,489	358,845	125,704	337,946	822,495	2,221,710	24,780,709	27,002,419
2022	1,834,650	2,594,475	4,429,125	357,392	124,775	333,660	815,827	2,221,136	24,778,228	26,999,364
2023	1,833,648	2,563,076	4,396,724	355,880	124,124	330,418	810,422	2,220,859	24,776,972	26,997,832
2024	1,830,768	2,561,502	4,392,270	354,800	123,506	328,411	806,717	2,220,669	24,775,921	26,996,590
2025	1,822,316	2,558,147	4,380,463	352,080	122,262	324,684	799,026	2,220,420	24,774,688	26,995,108
2026	1,817,635	2,553,598	4,371,233	350,675	121,456	322,574	794,705	2,113,673	24,576,008	26,689,681
2027	1,814,691	2,549,335	4,364,026	347,833	119,690	316,987	784,510	2,111,959	24,569,360	26,681,318
2028	1,811,420	2,545,250	4,356,670	344,055	117,390	310,189	771,634	2,106,438	24,555,867	26,662,305
2029	1,807,887	2,541,084	4,348,971	338,483	114,026	301,274	753,783	2,105,346	24,550,576	26,655,922
2030	1,798,138	2,526,664	4,324,802	334,374	111,837	295,633	741,844	2,104,177	24,544,170	26,648,347
2031	1,784,659	2,506,990	4,291,649	323,541	105,499	280,107	709,147	2,098,914	24,520,576	26,619,490
2032	1,773,058	2,487,463	4,260,521	325,715	107,020	283,453	716,188	2,099,700	24,527,470	26,627,169
2033	1,745,067	2,443,088	4,188,155	324,233	106,596	282,073	712,902	2,099,491	24,530,471	26,629,961
2034	1,681,104	2,370,044	4,051,148	312,324	99,893	264,782	676,999	2,097,850	24,524,850	26,622,699
2035	1,551,238	2,229,873	3,781,111	298,933	92,707	246,844	638,484	2,096,043	24,519,359	26,615,402
Total	98,029,572	125,998,242	224,027,814	36,899,593	26,371,557	87,974,252	151,245,402	91,761,202	985,767,852	1,077,529,054

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 Municipal and Industrial (14)	Kern County Water Agency Municipal and Industrial (c (15)	Kern County Water Agency Agricultural (16)	County of Kings (17)	Oak Flat Water District (18)	Tulare Lake Basin Water Storage District (19)	Total (20)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	2,727	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	34,377	0	0	0	0	294,105
1968	78,040	1,726	48,989	336,040	49,005	425,146	8,511	4,717	65,799	1,017,973
1969	78,176	5,178	57,463	392,319	52,578	873,099	9,019	5,127	248,960	1,721,919
1970	85,680	5,178	59,271	423,743	53,965	1,061,952	9,269	5,333	184,236	1,888,627
1971	97,686	5,178	60,377	444,878	54,756	1,410,462	9,410	5,743	196,053	2,284,543
1972	109,147	5,178	60,993	454,591	55,119	2,112,043	9,478	11,006	604,810	3,422,365
1973	120,062	5,178	61,419	458,815	55,292	2,435,920	9,508	6,358	233,932	3,386,484
1974	182,221	5,178	61,939	460,853	55,393	2,727,865	9,526	7,119	388,287	3,898,381
1975	221,323	5,178	62,502	463,168	55,534	3,267,235	9,550	7,334	463,319	4,555,143
1976	168,747	5,178	62,769	465,027	55,723	3,522,048	9,586	8,284	331,448	4,628,810
1977	165,903	5,178	63,412	467,732	56,010	3,859,154	9,629	7,589	316,908	4,951,515
1978	177,364	5,178	65,848	469,592	56,201	4,289,774	9,652	7,999	340,004	5,421,612
1979	210,348	5,178	66,163	472,355	56,537	4,710,358	9,713	8,204	382,658	5,921,514
1980	223,751	5,178	66,452	475,101	56,873	5,140,065	9,781	11,691	385,123	6,374,015
1981	223,751	5,178	68,040	491,508	58,817	5,625,424	10,173	8,819	408,220	6,899,930
1982	223,751	5,178	68,050	489,226	58,754	6,073,378	10,157	9,229	430,780	7,368,503
1983	234,120	5,178	68,387	493,471	59,424	6,583,370	10,292	7,732	51,285	7,513,259
1984	246,126	5,178	69,005	499,101	60,131	6,906,335	10,433	9,845	336,303	8,142,457
1985	257,587	5,178	69,734	506,991	61,292	7,354,289	10,666	10,050	244,658	8,520,445
1986	269,047	5,178	70,022	509,390	61,637	7,483,347	10,734	10,460	522,092	8,941,907
1987	280,507	5,178	70,527	513,062	62,165	8,251,109	10,837	10,665	544,651	9,748,701
1988	291,968	5,178	70,888	515,924	62,576	8,673,517	10,915	11,075	567,211	10,209,252
1989	303,428	5,178	71,773	519,584	63,201	8,978,235	11,065	11,486	590,308	10,554,258
1990	157,444	5,178	73,211	537,956	65,442	9,294,814	11,493	11,691	636,501	10,793,730
1991	291,482	5,178	75,857	567,033	70,023	9,294,814	12,307	11,691	636,501	10,964,886
1992	314,889	5,178	79,058	597,795	74,883	9,294,814	13,287	11,691	636,501	11,028,096
1993	314,889	5,178	80,554	610,696	76,728	9,294,814	13,639	11,691	636,501	11,044,690
1994	314,889	5,178	82,181	620,100	78,011	9,294,814	13,880	11,691	636,501	11,057,245
1995	314,889	5,178	83,477	626,867	78,969	9,294,814	14,064	11,691	636,501	11,066,450
1996	291,720	5,178	87,451	636,044	80,303	8,980,006	14,303	11,691	636,501	10,743,197
1997	291,720	5,178	90,319	639,863	80,792	8,915,013	14,382	11,691	636,501	10,685,459
1998	291,719	5,178	93,034	653,335	82,823	8,657,421	14,784	11,691	636,501	10,446,486
1999	291,719	5,178	94,383	660,789	83,958	8,657,421	15,012	11,691	636,501	10,456,652
2000	291,125	5,178	95,911	669,724	85,331	8,032,391	15,286	11,691	636,501	9,843,138
2001	314,889	5,178	97,951	691,175	88,791	8,385,972	15,989	11,691	636,501	10,248,137
2002	314,889	5,178	99,339	705,535	91,120	8,385,972	16,462	11,691	636,501	10,266,687
2003	314,889	5,178	99,428	705,879	91,171	8,385,972	16,473	11,691	636,501	10,267,182
2004	314,889	5,178	99,518	706,228	91,223	8,385,972	16,483	11,691	636,501	10,267,683
2005	314,889	5,178	99,606	706,540	91,270	8,385,972	16,493	11,691	636,501	10,268,140
2006	314,889	5,178	99,695	706,832	91,317	8,385,972	16,503	11,691	636,501	10,268,578
2007	314,889	5,178	99,695	706,832	91,317	8,385,972	16,503	11,691	636,501	10,268,578
2008	314,889	5,178	99,695	706,832	91,317	8,385,972	16,503	11,691	636,501	10,268,578
2009	314,889	5,178	99,695	706,832	91,317	8,385,972	16,503	11,691	636,501	10,268,578
2010	314,889	5,178	99,695	706,832	91,317	8,385,972	16,503	11,691	636,501	10,268,578
2011	314,889	5,178	99,695	706,832	91,317	8,385,972	16,503	11,691	636,501	10,268,578
2012	314,889	5,178	99,695	706,832	91,317	8,385,972	16,503	11,691	636,501	10,268,578
2013	314,889	5,178	99,695	706,832	91,317	8,385,972	16,503	11,691	636,501	10,268,578
2014	314,889	5,178	96,968	706,832	91,317	8,385,972	16,503	11,691	636,501	10,265,851
2015	314,889	5,178	93,661	642,494	82,025	8,385,972	16,503	11,691	636,501	10,188,914
2016	314,889	5,178	87,646	586,477	74,230	8,385,972	16,503	11,691	636,501	10,119,087
2017	314,889	5,178	73,417	473,382	56,940	8,385,972	16,503	11,691	636,501	9,974,473
2018	314,889	5,178	50,706	370,792	42,312	8,385,972	7,992	11,691	636,501	9,826,033
2019	314,889	5,178	42,232	314,514	38,739	8,385,972	7,484	11,691	636,501	9,757,200
2020	314,889	5,178	40,424	283,090	37,352	8,385,972	7,234	11,691	636,501	9,722,331
2021	314,889	5,178	39,318	261,954	36,561	8,385,972	7,092	11,691	636,501	9,699,156
2022	314,889	5,178	38,702	252,242	36,199	8,385,972	7,025	11,691	636,501	9,688,399
2023	314,889	5,178	38,276	248,017	36,025	8,385,972	6,994	11,691	636,501	9,683,543
2024	314,889	5,178	37,756	245,979	35,924	8,385,972	6,977	11,691	636,501	9,680,867
2025	314,889	5,178	37,193	243,664	35,783	8,385,972	6,952	11,691	636,501	9,677,823
2026	314,889	5,178	36,926	241,806	35,594	8,385,972	6,917	11,691	636,501	9,675,474
2027	314,889	5,178	36,283	239,100	35,307	8,385,972	6,873	11,691	636,501	9,671,794
2028	314,889	5,178	33,847	237,241	35,116	8,385,972	6,851	11,691	636,501	9,667,286
2029	314,889	5,178	33,532	234,477	34,781	8,385,972	6,789	11,691	636,501	9,663,810
2030	314,889	5,178	33,243	231,732	34,444	8,385,972	6,722	11,691	636,501	9,660,372
2031	314,889	5,178	31,655	215,325	32,501	8,385,972	6,330	11,691	636,501	9,640,042
2032	314,889	5,178	31,645	217,607	32,563	8,385,972	6,345	11,691	636,501	9,642,391
2033	314,889	5,178	31,308	213,362	31,893	8,385,972	6,211	11,691	636,501	9,637,005
2034	314,889	5,178	30,690	207,731	31,186	8,385,972	6,070	11,691	636,501	9,629,908
2035	314,889	5,178	29,961	199,841	30,026	8,385,972	5,837	11,691	636,501	9,619,896
Total	18,436,333	348,652	4,705,338	33,598,489	4,299,931	494,284,281	772,972	723,651	37,116,091	594,285,738

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	33,351	0	0	0	0	0	0	0	51,776	0
1964	62,921	27,471	14,439	4,374	36,574	1,144	28,462	8,212	82,882	34,412
1965	118,701	53,051	25,116	7,200	40,804	2,084	50,359	15,235	135,181	35,374
1966	215,957	101,347	44,766	12,489	73,212	3,756	90,472	27,701	232,692	61,515
1967	417,815	210,983	86,188	23,491	141,524	7,290	175,317	54,067	433,699	115,667
1968	671,472	419,989	141,104	38,582	232,093	11,791	286,547	87,363	730,432	194,683
1969	973,445	623,817	209,952	57,347	345,637	17,262	426,104	127,321	1,137,321	302,890
1970	1,270,231	780,776	296,106	84,863	487,724	23,445	592,090	171,434	1,692,806	444,060
1971	1,526,763	947,846	400,635	120,305	660,119	28,867	789,466	208,987	2,396,931	620,271
1972	1,658,140	1,057,278	455,251	137,563	750,193	31,331	895,853	226,677	2,827,874	721,555
1973	1,707,757	1,071,715	472,161	142,256	778,081	32,306	929,929	233,525	2,965,406	757,131
1974	1,725,821	1,118,318	480,244	146,447	791,413	32,628	942,065	235,875	3,055,143	777,701
1975	1,748,832	1,132,633	493,454	150,225	813,199	33,043	968,491	238,890	3,137,583	799,411
1976	1,761,749	1,145,197	503,324	152,917	829,476	33,295	988,477	240,623	3,215,754	820,202
1977	1,773,857	1,158,207	510,294	154,815	840,971	33,512	1,002,637	242,203	3,264,802	833,246
1978	1,784,028	1,177,141	514,952	156,133	848,653	33,703	1,011,996	243,571	3,294,948	841,174
1979	1,799,427	1,201,106	518,957	157,266	855,258	33,970	1,020,039	245,541	3,316,814	846,871
1980	1,817,658	1,248,966	523,127	158,377	862,135	34,274	1,028,548	247,804	3,337,384	852,396
1981	1,912,846	1,339,556	544,726	164,145	897,756	35,927	1,072,592	260,083	3,441,402	880,332
1982	1,904,756	1,370,688	542,325	163,693	893,796	35,796	1,067,364	259,085	3,434,069	878,112
1983	1,984,164	1,414,621	557,553	167,715	918,911	37,133	1,098,639	269,109	3,506,519	897,902
1984	2,089,292	1,441,195	577,739	173,611	952,201	38,902	1,139,616	282,358	3,614,898	927,550
1985	2,166,683	1,456,271	592,906	177,948	977,214	40,292	1,170,511	291,969	3,693,730	949,131
1986	2,212,364	1,464,365	603,972	181,136	995,465	40,960	1,193,004	297,450	3,750,662	964,692
1987	2,255,492	1,469,739	615,308	184,116	1,014,159	41,423	1,216,306	302,232	3,804,401	979,364
1988	2,272,657	1,475,183	623,869	186,383	1,028,278	41,710	1,233,855	304,331	3,844,794	990,353
1989	2,286,098	1,484,213	627,282	187,561	1,033,907	41,885	1,240,509	305,717	3,867,064	996,245
1990	2,340,677	1,506,879	644,143	192,624	1,061,714	42,761	1,274,405	312,258	3,938,847	1,015,658
1991	2,376,337	1,526,560	661,621	197,763	1,090,538	43,147	1,309,740	315,792	4,018,189	1,037,190
1992	2,420,572	1,547,929	681,095	204,172	1,122,655	43,784	1,348,641	320,722	4,123,117	1,065,827
1993	2,454,451	1,567,009	695,554	211,178	1,146,501	44,295	1,375,430	324,829	4,234,792	1,096,416
1994	2,488,633	1,584,896	707,520	220,372	1,166,235	44,845	1,394,464	328,815	4,441,557	1,152,660
1995	2,514,059	1,593,915	714,724	225,459	1,178,117	45,239	1,406,345	331,711	4,568,778	1,187,220
1996	2,539,263	1,609,971	721,988	229,745	1,190,097	45,647	1,419,072	334,700	4,675,786	1,216,223
1997	2,555,893	1,621,413	728,102	232,229	1,200,180	45,918	1,430,796	336,688	4,875,803	1,269,870
1998	2,580,496	1,635,388	733,893	233,610	1,209,730	46,333	1,960,870	339,740	4,958,458	1,292,014
1999	2,594,266	1,647,041	737,513	235,949	1,215,701	46,567	1,967,989	341,476	5,021,775	1,309,195
2000	2,609,818	3,476,947	742,512	238,195	1,223,945	46,843	1,978,184	405,273	5,070,263	1,322,278
2001	2,635,143	3,499,280	752,225	240,660	1,239,963	47,273	1,998,313	408,381	5,114,974	1,334,550
2002	2,651,304	3,507,366	755,135	241,403	1,244,763	47,543	2,004,555	410,440	5,128,258	1,338,204
2003	2,652,339	3,508,298	755,322	241,451	1,245,072	47,561	2,005,064	410,590	5,129,096	1,338,434
2004	2,653,389	3,509,241	755,512	241,499	1,245,385	47,578	2,005,581	410,742	5,129,946	1,338,668
2005	2,654,332	3,510,099	755,683	241,542	1,245,666	47,594	2,006,044	410,879	5,130,708	1,338,877
2006	2,655,289	3,510,971	755,856	241,586	1,245,952	47,610	2,006,515	411,018	5,131,483	1,339,090
2007	2,655,289	3,510,971	755,856	241,586	1,245,952	47,610	2,006,515	411,018	5,131,483	1,339,090
2008	2,655,289	3,510,971	755,856	241,586	1,245,952	47,610	2,006,515	411,018	5,131,483	1,339,090
2009	2,655,289	3,510,971	755,856	241,586	1,245,952	47,610	2,006,515	411,018	5,131,483	1,339,090
2010	2,655,289	3,510,971	755,856	241,586	1,245,952	47,610	2,006,515	411,018	5,131,483	1,339,090
2011	2,655,289	3,510,971	755,856	241,586	1,245,952	47,610	2,006,515	411,018	5,131,483	1,339,090
2012	2,655,289	3,510,971	755,856	241,586	1,245,952	47,610	2,006,515	411,018	5,131,483	1,339,090
2013	2,621,938	3,510,971	755,856	241,586	1,232,574	47,610	2,006,515	411,018	5,079,707	1,325,977
2014	2,592,368	3,470,097	741,417	237,212	1,222,756	46,467	1,973,586	402,109	5,048,601	1,317,790
2015	2,536,588	3,433,985	730,741	234,386	1,205,148	45,527	1,948,038	394,507	4,996,302	1,303,716
2016	2,439,332	3,367,922	711,090	229,097	1,172,740	43,854	1,900,523	380,904	4,898,791	1,277,575
2017	2,237,474	3,209,550	669,668	218,095	1,104,428	40,320	1,800,932	352,442	4,697,784	1,223,423
2018	1,983,818	2,842,473	614,752	203,004	1,013,859	35,819	1,663,247	315,190	4,401,051	1,144,407
2019	1,681,844	2,453,750	545,904	184,239	900,314	30,348	1,485,777	269,047	3,994,162	1,036,200
2020	1,385,058	2,148,925	459,750	156,722	758,228	24,165	1,278,502	218,075	3,438,677	895,029
2021	1,128,526	1,821,444	355,221	121,280	585,833	18,743	1,045,835	174,650	2,734,552	718,819
2022	997,149	1,611,553	300,605	104,023	495,759	16,279	920,365	153,784	2,303,609	617,534
2023	947,533	1,610,529	283,695	99,329	467,871	15,304	879,104	145,740	2,166,077	581,959
2024	929,468	1,539,290	275,612	95,138	454,539	14,982	864,176	142,927	2,076,340	561,389
2025	906,458	1,517,850	262,402	91,361	432,753	14,567	834,355	139,349	1,993,901	539,679
2026	893,540	1,493,888	252,532	88,669	416,476	14,315	812,631	137,328	1,915,729	518,887
2027	881,432	1,469,845	245,562	86,771	404,981	14,098	797,028	135,514	1,866,681	505,844
2028	871,261	1,433,063	240,904	85,453	397,299	13,907	786,722	133,996	1,836,535	497,916
2029	855,862	1,380,341	236,899	84,320	390,694	13,640	777,194	131,782	1,814,669	492,219
2030	837,631	1,273,652	232,729	83,209	383,817	13,336	767,168	129,266	1,794,099	486,694
2031	742,443	1,077,909	211,130	77,441	348,196	11,683	711,735	115,092	1,690,081	458,758
2032	750,534	1,005,950	213,531	77,893	352,156	11,814	720,767	116,726	1,697,414	460,978
2033	671,125	904,666	198,303	73,871	327,041	10,477	685,592	106,052	1,624,964	441,188
2034	565,998	846,699	178,117	67,975	293,750	8,708	640,098	92,052	1,516,585	411,540
2035	488,606	818,298	162,950	63,637	268,738	7,318	607,424	82,147	1,437,753	389,958
Total	129,406,258	132,063,351	36,688,654	11,614,622	60,476,629	2,327,208	88,497,660	18,727,222	244,771,759	63,756,633

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	691,432	0	776,559	0	0	0	0	42,995	1,395,570
1964	21,378	1,261,584	9,386	1,593,239	0	0	0	0	69,933	2,532,630
1965	21,885	2,182,389	17,781	2,705,160	0	0	405	405	100,007	4,263,614
1966	37,995	3,903,334	33,453	4,838,689	0	0	565	565	116,964	6,752,156
1967	71,340	7,699,870	68,210	9,505,461	0	0	562	562	156,911	11,854,164
1968	120,190	14,356,583	133,405	17,424,234	0	0	565	565	232,318	20,897,139
1969	187,208	21,874,843	202,760	26,485,907	0	0	3,194	3,194	296,245	30,958,829
1970	275,229	29,015,634	258,064	35,392,462	0	0	15,133	15,133	316,540	40,141,622
1971	385,331	37,289,492	316,558	45,691,571	0	0	15,960	15,960	320,314	50,860,364
1972	448,411	44,414,327	354,217	53,978,670	0	0	17,346	17,346	320,948	60,297,555
1973	470,558	46,660,277	357,625	56,578,727	0	0	17,347	17,347	321,620	62,900,856
1974	483,643	48,684,977	372,408	58,846,683	0	0	17,348	17,348	322,033	65,689,980
1975	497,117	49,648,145	376,810	60,037,833	0	0	17,350	17,350	323,489	67,558,413
1976	510,055	50,501,031	381,090	61,083,190	0	0	17,351	17,351	323,909	68,996,282
1977	518,152	51,191,449	385,403	61,909,548	0	0	17,354	17,354	324,749	70,170,845
1978	523,071	51,791,338	391,052	62,611,760	0	0	17,355	17,355	325,828	71,382,058
1979	526,596	52,595,738	399,966	63,517,549	0	0	17,357	17,357	327,300	72,819,214
1980	530,003	54,003,921	417,467	65,062,060	0	0	17,358	17,358	328,660	74,859,477
1981	547,221	57,036,346	450,169	68,583,101	0	0	17,360	17,360	331,675	79,000,181
1982	545,878	57,834,604	461,600	69,391,766	0	0	17,361	17,361	331,332	80,293,940
1983	558,049	59,408,258	477,712	71,296,285	0	0	17,362	17,362	332,152	82,415,815
1984	576,287	60,685,377	487,249	72,986,275	0	0	17,363	17,363	335,833	84,914,004
1985	589,556	61,517,084	492,508	74,115,803	0	0	17,364	17,364	340,076	86,736,019
1986	599,123	62,039,214	495,370	74,837,777	0	0	17,366	17,366	340,909	88,582,437
1987	608,146	62,467,914	497,152	75,455,752	0	0	17,367	17,367	341,742	91,442,700
1988	614,906	62,826,394	499,015	75,941,728	0	0	17,369	17,369	343,240	93,539,361
1989	618,549	63,169,981	501,977	76,360,988	0	0	17,372	17,372	345,836	94,763,721
1990	630,434	64,136,934	509,970	77,607,304	0	0	17,374	17,374	348,097	96,492,429
1991	643,634	65,053,238	516,563	78,790,312	0	0	17,378	17,378	353,163	98,068,234
1992	661,194	66,157,049	523,613	80,220,370	0	0	17,380	17,380	361,101	99,803,171
1993	679,945	67,288,755	529,868	81,649,023	0	0	17,383	17,383	365,416	101,507,647
1994	714,708	68,873,431	535,563	83,653,699	0	0	17,384	17,384	368,606	104,280,772
1995	736,111	69,762,919	538,340	84,802,937	0	0	17,385	17,385	370,462	108,210,226
1996	754,075	70,642,386	542,296	85,921,249	0	0	17,385	17,385	372,780	118,184,231
1997	787,716	71,924,931	545,030	87,554,569	0	0	17,385	17,385	373,962	128,406,410
1998	801,576	72,680,851	549,083	89,022,042	0	0	17,385	17,385	375,914	131,956,615
1999	812,229	73,324,152	552,866	89,806,719	0	0	17,386	17,386	376,546	133,412,451
2000	820,311	73,832,215	555,967	92,322,751	0	0	17,386	17,386	(120,297)	136,354,179
2001	827,848	74,692,714	563,730	93,355,054	0	0	17,386	17,386	(118,264)	138,589,120
2002	830,088	74,936,692	566,103	93,661,854	0	0	17,386	17,386	(118,380)	139,043,708
2003	830,229	74,952,189	566,254	93,681,899	0	0	17,386	17,386	(118,429)	139,066,772
2004	830,372	74,967,897	566,408	93,702,218	0	0	17,386	17,386	(118,477)	139,090,150
2005	830,501	74,981,992	566,545	93,720,462	0	0	17,386	17,386	(118,523)	139,111,189
2006	830,632	74,996,323	566,685	93,739,010	0	0	17,386	17,386	(118,566)	139,132,018
2007	830,632	74,996,323	566,685	93,739,010	0	0	17,386	17,386	(118,566)	139,132,018
2008	830,632	74,996,323	566,685	93,739,010	0	0	17,386	17,386	(118,566)	139,132,018
2009	830,632	74,996,323	566,685	93,739,010	0	0	17,386	17,386	(118,566)	139,132,018
2010	830,632	74,996,323	566,685	93,739,010	0	0	17,386	17,386	(118,566)	139,132,018
2011	830,632	74,996,323	566,685	93,739,010	0	0	17,386	17,386	(118,566)	139,132,018
2012	830,632	74,996,323	566,685	93,739,010	0	0	17,386	17,386	(118,566)	139,132,018
2013	822,472	74,304,891	566,685	92,927,800	0	0	17,386	17,386	(104,886)	137,701,796
2014	817,413	73,734,739	557,299	92,161,854	0	0	17,386	17,386	(96,315)	136,615,471
2015	808,747	72,813,934	548,904	91,000,523	0	0	16,981	16,981	(86,746)	134,835,077
2016	792,636	71,092,989	533,232	88,840,685	0	0	16,821	16,821	(81,350)	132,320,225
2017	759,292	67,296,453	498,475	84,108,336	0	0	16,823	16,823	(68,640)	127,152,639
2018	710,441	60,639,740	433,280	76,001,081	0	0	16,821	16,821	(44,647)	118,496,611
2019	643,423	53,121,480	363,925	66,710,413	0	0	14,192	14,192	(24,308)	108,841,040
2020	555,403	45,980,689	308,621	57,607,844	0	0	2,253	2,253	(17,849)	99,594,070
2021	445,300	37,706,831	250,127	47,107,161	0	0	1,426	1,426	(16,649)	89,046,497
2022	382,221	30,581,996	212,468	38,697,345	0	0	40	40	(16,447)	80,613,653
2023	360,074	28,336,046	209,060	36,102,321	0	0	39	39	(16,233)	77,974,648
2024	346,989	26,311,346	194,277	33,806,473	0	0	38	38	(16,101)	75,666,854
2025	333,515	25,348,178	189,875	32,604,243	0	0	36	36	(15,638)	74,441,061
2026	320,577	24,495,292	185,595	31,545,459	0	0	35	35	(15,506)	73,061,081
2027	312,480	23,804,874	181,282	30,706,392	0	0	32	32	(15,237)	72,192,835
2028	307,561	23,204,985	175,633	29,985,235	0	0	31	31	(14,895)	71,428,266
2029	304,036	22,400,585	166,719	29,048,960	0	0	29	29	(14,425)	70,457,050
2030	300,629	20,992,402	149,218	27,443,850	0	0	27	27	(13,994)	68,805,248
2031	283,410	17,959,977	116,516	23,804,371	0	0	26	26	(13,034)	65,051,691
2032	284,754	17,161,719	105,085	22,959,321	0	0	24	24	(13,144)	64,192,470
2033	272,582	15,588,064	88,973	20,992,898	0	0	24	24	(12,883)	62,148,062
2034	254,345	14,310,946	79,436	19,266,249	0	0	23	23	(11,710)	60,235,316
2035	241,076	13,479,239	74,177	18,121,321	0	0	21	21	(10,360)	58,765,875
Total	39,550,648	3,638,601,537	27,852,622	4,494,204,444	0	0	869,191	869,191	8,996,276	6,551,157,919

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	21,132	39,699	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	195,793	349,938	0	0	0
1966	0	0	0	79,753	78,779	218,543	377,075	0	0	0
1967	0	0	0	127,896	123,667	335,224	586,787	0	0	0
1968	130	0	130	126,058	120,563	333,506	580,127	11,800	21,770	33,570
1969	80,875	0	80,875	145,411	138,050	372,585	656,046	63,113	116,435	179,548
1970	94,872	0	94,872	128,993	120,245	320,664	569,902	74,187	136,867	211,054
1971	45,579	0	45,579	113,071	108,346	296,004	517,421	74,011	136,541	210,552
1972	37,895	0	37,895	122,407	117,483	334,366	574,256	79,196	146,107	225,303
1973	32,993	0	32,993	122,738	116,785	325,726	565,249	75,714	139,683	215,397
1974	46,498	0	46,498	154,435	146,929	403,080	704,444	76,530	141,189	217,719
1975	37,707	0	37,707	189,175	182,087	513,823	885,085	92,605	170,845	263,450
1976	60,786	0	60,786	203,064	193,435	524,813	921,312	94,935	175,144	270,079
1977	78,400	0	78,400	179,869	169,065	500,101	849,035	102,945	189,922	292,867
1978	56,318	0	56,318	239,301	228,855	647,828	1,115,984	104,060	191,978	296,038
1979	73,852	0	73,852	236,986	232,105	666,742	1,135,833	100,748	185,868	286,616
1980	81,769	0	81,769	389,575	372,185	1,010,830	1,772,590	126,328	233,105	359,433
1981	101,340	0	101,340	317,408	302,272	834,257	1,453,937	140,208	258,712	398,920
1982	191,987	0	191,987	386,742	369,633	1,098,844	1,855,219	142,045	262,101	404,146
1983	80,215	0	80,215	438,536	428,973	1,269,373	2,136,882	171,001	315,523	486,524
1984	106,485	0	106,485	591,243	565,721	1,817,629	2,974,593	201,768	372,284	574,052
1985	215,341	0	215,341	674,975	655,490	1,840,211	3,170,676	242,935	448,233	691,168
1986	203,704	0	203,704	613,273	583,077	1,784,056	2,980,406	233,000	429,904	662,904
1987	295,505	0	295,505	687,629	652,468	2,000,817	3,340,914	230,484	463,838	694,322
1988	312,677	(58)	312,619	676,847	655,274	1,910,092	3,242,213	258,807	561,030	819,837
1989	403,330	688,185	1,091,515	716,831	712,354	1,897,149	3,326,334	244,772	668,476	913,248
1990	658,942	674,944	1,333,886	782,589	780,305	2,129,966	3,692,860	310,222	677,025	987,247
1991	726,717	860,903	1,587,620	543,178	524,741	1,520,569	2,588,488	302,369	673,858	976,227
1992	483,580	712,313	1,195,893	796,058	855,050	2,253,496	3,904,604	346,220	736,477	1,082,697
1993	524,000	708,129	1,232,129	1,280,736	1,261,431	3,338,742	5,880,909	386,060	734,138	1,120,198
1994	573,815	658,277	1,232,092	1,368,651	1,312,740	3,560,294	6,241,685	481,022	888,288	1,369,310
1995	539,407	660,770	1,200,177	1,232,272	1,187,201	3,216,470	5,635,943	477,929	881,323	1,359,252
1996	604,992	1,011,298	1,616,290	1,185,220	1,124,968	3,007,330	5,317,518	649,161	1,197,179	1,846,340
1997	563,579	741,881	1,305,460	1,029,670	968,999	2,667,649	4,666,318	406,652	749,805	1,156,457
1998	470,513	673,443	1,143,956	1,082,205	1,191,967	3,549,826	5,823,998	818,297	2,978,745	3,797,042
1999	635,698	1,066,390	1,702,088	1,301,258	1,340,327	5,291,278	7,932,863	824,364	3,048,027	3,872,391
2000	840,214	1,480,683	2,320,897	2,532,661	1,482,626	4,057,312	8,072,599	829,949	2,894,729	3,724,678
2001	776,987	1,340,914	2,117,901	2,564,960	1,490,217	4,090,344	8,145,521	742,035	2,535,308	3,277,343
2002	789,390	1,367,952	2,157,342	2,527,088	1,453,402	4,012,771	7,993,261	735,150	2,425,136	3,160,286
2003	778,886	1,342,964	2,121,850	2,484,413	1,426,781	3,949,415	7,860,609	735,541	2,426,907	3,162,448
2004	760,290	1,309,978	2,070,268	2,414,120	1,389,624	3,846,089	7,649,833	716,615	2,363,572	3,080,187
2005	760,040	1,309,412	2,069,452	2,413,573	1,389,429	3,845,608	7,648,610	716,405	2,362,624	3,079,029
2006	759,495	1,308,179	2,067,674	2,412,387	1,389,004	3,844,565	7,645,956	715,950	2,360,566	3,076,516
2007	759,613	1,308,446	2,068,059	2,412,642	1,389,096	3,844,790	7,646,528	716,049	2,361,012	3,077,061
2008	759,689	1,308,618	2,068,307	2,412,809	1,389,155	3,844,936	7,646,900	716,113	2,361,301	3,077,414
2009	759,770	1,308,803	2,068,573	2,412,986	1,389,218	3,845,092	7,647,296	716,180	2,361,606	3,077,786
2010	759,561	1,308,325	2,067,886	2,412,527	1,389,054	3,844,688	7,646,269	716,004	2,360,811	3,076,815
2011	762,539	1,313,771	2,076,310	2,423,189	1,394,572	3,859,929	7,677,690	718,936	2,371,031	3,089,967
2012	762,603	1,313,915	2,076,518	2,423,330	1,394,623	3,860,054	7,678,007	718,989	2,371,272	3,090,261
2013	763,037	1,314,893	2,077,930	2,424,270	1,394,959	3,860,879	7,680,108	719,351	2,372,907	3,092,258
2014	763,709	1,316,414	2,080,123	2,425,735	1,395,483	3,862,168	7,683,386	719,912	2,375,445	3,095,357
2015	763,689	1,316,366	2,080,055	2,425,690	1,395,467	3,862,128	7,683,285	719,895	2,375,370	3,095,265
2016	763,525	1,315,996	2,079,521	2,425,333	1,395,339	3,861,813	7,682,485	719,758	2,374,748	3,094,506
2017	763,632	1,316,238	2,079,870	2,425,565	1,395,422	3,862,018	7,683,005	719,847	2,375,150	3,094,997
2018	764,141	1,317,386	2,081,527	2,426,670	1,395,818	3,862,989	7,685,477	720,271	2,377,069	3,097,340
2019	763,835	1,316,692	2,080,527	2,426,002	1,395,579	3,862,403	7,683,984	720,014	2,375,909	3,095,923
2020	763,712	1,316,418	2,080,130	2,425,738	1,395,484	3,862,170	7,683,392	719,913	2,375,450	3,095,363
2021	763,491	1,315,915	2,079,406	2,425,252	1,395,310	3,861,743	7,682,305	719,727	2,374,610	3,094,337
2022	764,088	1,317,267	2,081,355	2,426,553	1,395,776	3,862,886	7,685,215	720,226	2,376,866	3,097,092
2023	763,485	1,315,902	2,079,387	2,425,239	1,395,306	3,861,732	7,682,277	719,722	2,374,588	3,094,310
2024	763,785	1,316,581	2,080,366	2,425,894	1,395,540	3,862,307	7,683,741	719,973	2,375,720	3,095,693
2025	763,706	1,316,404	2,080,110	2,425,722	1,395,478	3,862,156	7,683,356	719,907	2,375,423	3,095,330
2026	763,830	1,316,678	2,080,508	2,425,988	1,395,574	3,862,390	7,683,952	720,009	2,375,885	3,095,894
2027	763,649	1,316,272	2,079,921	2,425,596	1,395,433	3,862,045	7,683,074	719,859	2,375,206	3,095,065
2028	763,952	1,316,956	2,080,908	2,426,255	1,395,669	3,862,624	7,684,548	720,112	2,376,349	3,096,461
2029	763,610	1,316,186	2,079,796	2,425,514	1,395,404	3,861,974	7,682,892	719,827	2,375,063	3,094,890
2030	763,451	1,315,825	2,079,276	2,425,167	1,395,280	3,861,668	7,682,115	719,694	2,374,462	3,094,156
2031	764,044	1,317,162	2,081,206	2,426,455	1,395,741	3,862,801	7,684,997	720,188	2,376,693	3,096,881
2032	763,987	1,317,034	2,081,021	2,426,331	1,395,696	3,862,691	7,684,718	720,141	2,376,480	3,096,621
2033	763,384	1,315,672	2,079,056	2,425,018	1,395,227	3,861,538	7,681,783	719,638	2,374,204	3,093,842
2034	763,761	1,316,529	2,080,290	2,425,844	1,395,522	3,862,263	7,683,629	719,954	2,375,635	3,095,589
2035	763,963	1,316,980	2,080,943	2,426,280	1,395,678	3,862,647	7,684,605	720,121	2,376,392	3,096,513
Total	36,014,044	56,056,201	92,070,245	106,070,273	68,542,151	191,758,650	366,371,074	33,995,463	104,521,919	138,517,382

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	60,701	678,086	2,008	2,073	77,591	865,867
1969	45,479	2,235	30,158	80,554	1,197,126	2,286	2,085	90,773	1,450,696
1970	46,969	2,292	35,450	96,673	1,381,493	2,344	2,158	93,408	1,660,787
1971	47,997	2,314	35,366	106,654	1,643,163	2,366	2,288	94,874	1,935,022
1972	49,866	2,414	37,844	122,313	1,729,169	2,469	2,254	98,777	2,045,106
1973	50,006	2,385	36,180	125,553	1,719,873	2,440	2,310	98,330	2,037,077
1974	52,818	2,556	36,570	135,661	1,823,065	2,614	2,529	104,609	2,160,422
1975	66,963	3,243	44,251	162,738	2,235,242	3,317	3,191	132,663	2,651,608
1976	66,504	3,328	45,364	159,303	2,215,999	3,404	2,919	133,940	2,630,761
1977	75,595	3,812	49,192	189,661	2,522,290	3,898	3,708	152,838	3,000,994
1978	70,688	3,503	49,725	174,897	2,427,163	3,583	3,644	141,672	2,874,875
1979	68,879	3,436	48,142	173,677	2,378,315	3,514	3,492	138,493	2,817,948
1980	95,898	4,722	59,551	235,741	3,146,570	4,830	4,777	191,582	3,743,671
1981	118,448	5,965	66,183	266,353	3,440,557	6,099	5,187	239,323	4,148,115
1982	134,083	6,711	67,061	311,879	3,848,922	6,862	6,382	270,061	4,651,961
1983	184,902	9,242	80,869	426,485	5,030,031	9,450	8,494	372,182	6,121,655
1984	194,228	9,656	95,555	471,854	5,636,134	9,874	8,719	389,892	6,815,912
1985	200,694	9,957	115,227	486,162	6,042,593	10,182	8,982	402,457	7,276,254
1986	207,028	10,302	110,479	530,803	6,372,710	10,536	10,341	415,776	7,667,975
1987	205,002	10,259	109,401	533,451	6,378,437	10,493	10,517	412,889	7,670,449
1988	203,711	10,223	122,903	516,432	6,388,497	10,455	10,341	410,868	7,673,430
1989	224,049	11,269	116,197	564,169	6,747,046	11,526	11,102	452,406	8,137,764
1990	271,051	13,666	148,238	664,040	8,111,616	13,976	13,206	547,974	9,783,767
1991	275,748	13,854	144,486	662,755	8,111,610	14,168	13,218	556,474	9,792,313
1992	317,889	16,027	162,466	764,224	9,115,453	16,393	18,209	642,672	11,053,333
1993	359,879	17,989	184,477	831,662	10,372,245	18,399	19,560	724,397	12,528,608
1994	309,099	15,487	224,254	738,622	9,789,905	15,840	16,434	622,912	11,732,553
1995	395,441	19,918	220,899	898,339	11,190,121	20,373	21,551	799,070	13,565,712
1996	362,853	19,968	301,835	902,162	11,870,842	20,424	21,664	796,711	14,296,459
1997	366,759	20,154	186,450	942,987	10,557,114	20,613	19,344	806,084	12,919,505
1998	459,232	24,867	288,941	1,111,770	12,373,188	25,436	21,941	1,007,521	15,312,896
1999	389,849	21,450	260,627	988,233	11,340,252	21,938	21,713	855,877	13,899,939
2000	451,074	24,221	289,697	1,233,368	12,487,656	24,769	26,842	975,591	15,513,218
2001	466,589	23,235	270,847	1,182,738	12,201,967	23,762	25,311	937,408	15,131,857
2002	426,799	21,147	274,128	1,112,937	11,491,697	21,626	24,163	855,292	14,227,789
2003	427,130	21,163	274,274	1,027,213	11,499,766	21,642	24,173	855,951	14,151,312
2004	414,696	20,543	267,156	999,547	11,186,618	21,009	23,624	830,961	13,764,154
2005	414,519	20,535	267,078	999,144	11,182,304	21,000	23,619	830,609	13,758,808
2006	414,135	20,516	266,908	998,269	11,172,932	20,981	23,608	829,844	13,747,193
2007	414,217	20,520	266,945	998,458	11,174,953	20,985	23,611	830,009	13,749,698
2008	414,272	20,523	266,969	998,581	11,176,276	20,987	23,612	830,117	13,751,337
2009	414,329	20,526	266,994	998,711	11,177,671	20,990	23,614	830,231	13,753,066
2010	414,180	20,518	266,929	998,373	11,174,041	20,983	23,610	829,934	13,748,568
2011	416,101	20,614	268,026	1,002,729	11,223,006	21,080	23,695	833,788	13,809,039
2012	416,146	20,616	268,046	1,002,832	11,224,107	21,083	23,696	833,877	13,810,403
2013	416,451	20,631	268,181	1,003,526	11,231,543	21,098	23,705	834,484	13,819,619
2014	416,926	20,654	268,390	1,004,606	11,243,108	21,122	23,719	835,429	13,833,954
2015	416,911	20,653	268,383	1,004,573	11,242,759	21,121	23,718	835,400	13,833,518
2016	416,795	20,648	268,332	1,004,309	11,239,930	21,115	23,715	835,169	13,830,013
2017	416,871	20,651	268,366	1,004,481	11,241,768	21,119	23,717	835,319	13,832,292
2018	417,229	20,669	268,524	1,005,296	11,250,499	21,137	23,728	836,032	13,843,114
2019	417,012	20,658	268,428	1,004,803	11,245,223	21,126	23,721	835,601	13,836,572
2020	416,926	20,654	268,390	1,004,608	11,243,126	21,122	23,719	835,430	13,833,975
2021	416,769	20,646	268,321	1,004,250	11,239,294	21,114	23,714	835,117	13,829,225
2022	417,191	20,667	268,507	1,005,209	11,249,571	21,135	23,726	835,956	13,841,962
2023	416,765	20,646	268,319	1,004,241	11,239,196	21,114	23,714	835,109	13,829,104
2024	416,977	20,656	268,413	1,004,724	11,244,367	21,124	23,720	835,531	13,835,512
2025	416,921	20,654	268,388	1,004,596	11,243,005	21,121	23,719	835,420	13,833,824
2026	417,008	20,658	268,426	1,004,793	11,245,114	21,126	23,721	835,592	13,836,438
2027	416,881	20,652	268,370	1,004,504	11,242,018	21,119	23,718	835,340	13,832,602
2028	417,095	20,662	268,464	1,004,991	11,247,226	21,130	23,724	835,765	13,839,057
2029	416,854	20,650	268,358	1,004,443	11,241,364	21,118	23,717	835,286	13,831,790
2030	416,741	20,645	268,309	1,004,187	11,238,617	21,112	23,714	835,062	13,828,387
2031	417,159	20,665	268,493	1,005,137	11,248,800	21,133	23,726	835,893	13,841,006
2032	417,119	20,663	268,475	1,005,046	11,247,822	21,131	23,724	835,813	13,839,793
2033	416,693	20,643	268,287	1,004,077	11,237,447	21,110	23,712	834,966	13,826,935
2034	416,961	20,656	268,405	1,004,686	11,243,969	21,123	23,720	835,499	13,835,019
2035	417,102	20,663	268,468	1,005,008	11,247,413	21,130	23,724	835,780	13,839,288
Total	21,048,957	1,054,888	13,206,974	51,095,502	584,781,000	1,078,807	1,163,046	42,593,701	716,022,875

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	65,074	28,085	11,697	2,958	19,291	1,089	24,380	8,173	52,315	14,399
1969	86,339	70,342	15,522	3,925	25,598	1,445	32,348	10,844	69,419	19,106
1970	107,807	84,577	19,392	4,904	31,981	1,804	40,391	13,540	86,727	23,865
1971	178,820	105,979	32,228	8,150	53,151	2,992	66,999	22,459	144,136	39,636
1972	363,555	202,625	106,740	30,967	176,037	6,601	213,032	48,102	548,123	144,113
1973	404,661	222,765	121,341	34,674	200,116	7,346	243,320	53,975	724,535	190,156
1974	434,868	235,528	130,627	37,062	215,432	7,677	262,735	56,383	786,107	207,019
1975	504,791	289,501	151,031	43,176	249,082	9,082	303,108	65,580	905,424	238,842
1976	559,013	262,420	160,686	44,454	265,004	10,030	325,512	73,253	964,524	256,570
1977	675,504	335,749	184,813	47,743	304,792	11,890	381,161	87,355	1,069,446	289,793
1978	600,343	376,946	187,028	54,156	308,449	10,711	373,192	78,304	1,148,279	300,751
1979	661,123	349,072	196,264	52,211	323,677	12,124	401,469	87,126	1,125,452	302,508
1980	858,039	415,571	253,090	71,921	417,398	15,435	508,379	112,853	1,518,405	401,223
1981	1,001,503	511,087	284,970	73,534	469,970	18,046	588,024	131,992	1,548,350	420,523
1982	1,128,643	557,494	320,938	89,560	529,292	20,193	649,204	148,012	1,870,559	497,871
1983	1,744,932	832,687	450,049	119,275	742,218	30,643	922,072	225,793	2,373,149	639,682
1984	2,105,780	943,524	548,784	150,179	905,055	36,810	1,112,196	271,187	3,018,294	803,394
1985	2,157,936	1,055,744	584,697	157,841	964,282	38,972	1,191,309	277,250	3,230,403	860,780
1986	2,311,841	1,102,466	618,750	162,748	1,020,438	40,051	1,268,806	295,987	3,318,638	893,069
1987	2,366,343	1,032,918	628,222	167,262	1,036,061	41,773	1,283,836	307,844	3,400,838	913,933
1988	2,303,274	1,042,113	649,276	175,694	1,070,784	40,604	1,321,553	298,438	3,587,873	960,968
1989	2,280,051	1,088,176	613,266	169,993	1,011,401	39,501	1,240,888	292,775	3,499,964	932,519
1990	2,636,186	1,275,150	708,829	201,242	1,169,006	45,472	1,424,445	336,069	4,084,211	1,078,392
1991	2,737,441	1,454,172	738,324	203,571	1,217,648	48,936	1,494,085	358,165	4,080,042	1,077,863
1992	2,781,586	1,579,025	725,926	191,382	1,197,197	49,829	1,489,119	362,844	3,859,480	1,041,978
1993	3,109,819	1,689,775	823,889	227,172	1,358,763	56,125	1,667,973	411,539	4,679,447	1,245,148
1994	2,825,181	1,609,511	793,890	222,274	1,309,284	51,258	1,634,795	376,175	4,744,455	1,253,522
1995	3,121,440	1,720,649	847,281	229,651	1,397,334	58,749	1,766,297	444,998	4,791,885	1,262,319
1996	3,093,678	1,966,634	861,854	225,824	1,421,360	56,813	1,817,427	423,444	4,668,851	1,245,954
1997	3,250,394	1,810,292	918,428	281,067	1,514,687	59,547	1,853,224	446,127	5,705,741	1,477,757
1998	3,918,711	2,075,973	1,083,269	303,193	1,786,522	74,623	3,246,156	566,989	6,151,307	1,654,831
1999	3,786,178	2,138,127	1,120,487	318,000	1,997,901	75,333	3,245,513	545,386	7,274,534	1,819,266
2000	4,263,972	3,890,720	1,152,588	321,751	1,900,850	76,000	3,494,954	668,204	7,312,937	1,812,244
2001	4,092,341	3,783,091	1,075,696	300,959	1,924,041	72,280	3,261,984	640,757	7,327,423	1,682,893
2002	3,877,416	3,629,832	1,019,103	285,745	1,680,709	68,588	3,106,626	608,421	6,040,819	1,606,157
2003	3,792,245	3,552,739	1,005,089	263,285	1,657,586	68,675	3,061,902	595,382	5,642,219	1,523,383
2004	3,710,728	3,484,299	990,790	266,368	1,634,010	67,184	2,995,036	582,547	5,676,686	1,521,236
2005	3,708,784	3,530,345	1,014,526	296,190	1,673,172	67,140	2,992,984	582,213	6,206,555	1,624,284
2006	3,704,505	3,472,535	984,944	261,887	1,624,367	67,040	2,988,461	581,478	5,596,615	1,504,571
2007	3,705,440	3,488,262	998,461	277,996	1,646,667	67,062	2,989,451	581,639	5,882,972	1,560,594
2008	3,706,040	3,494,112	992,690	270,690	1,637,145	67,076	2,990,084	581,742	5,753,172	1,535,372
2009	3,706,684	3,497,895	998,754	277,822	1,647,151	67,091	2,990,767	581,853	5,879,953	1,560,214
2010	3,705,046	3,493,378	993,910	272,602	1,639,159	67,053	2,989,038	581,572	5,787,078	1,541,821
2011	3,719,473	3,512,252	1,002,981	279,552	1,654,123	67,330	3,001,511	583,881	5,913,869	1,568,308
2012	3,719,989	3,507,008	999,816	275,462	1,648,900	67,342	3,002,060	583,970	5,841,215	1,554,221
2013	3,723,390	3,523,493	991,939	264,383	1,635,902	67,421	3,005,656	584,554	5,644,560	1,516,426
2014	3,728,638	3,517,904	1,011,202	285,673	1,667,683	67,542	3,011,199	585,455	6,023,283	1,591,192
2015	3,728,495	3,513,075	994,147	264,898	1,639,545	67,539	3,011,051	585,431	5,654,066	1,519,137
2016	3,727,234	3,530,425	1,013,062	288,537	1,670,751	67,510	3,009,725	585,215	6,074,084	1,600,869
2017	3,728,080	3,525,283	1,001,006	273,447	1,650,860	67,530	3,010,620	585,361	5,805,965	1,548,704
2018	3,732,046	3,525,866	1,005,878	277,705	1,658,898	67,622	3,014,809	586,041	5,881,913	1,564,185
2019	3,729,678	3,541,586	1,014,007	288,641	1,672,311	67,567	3,012,314	585,635	6,076,104	1,601,675
2020	3,728,708	3,534,132	1,002,010	274,403	1,652,517	67,544	3,011,286	585,469	5,823,002	1,552,133
2021	3,726,966	3,506,586	991,136	261,866	1,634,578	67,504	3,009,445	585,169	5,600,073	1,508,349
2022	3,731,676	3,511,592	1,004,166	275,762	1,656,074	67,613	3,014,431	585,979	5,847,362	1,557,386
2023	3,726,937	3,519,208	1,012,406	287,857	1,669,671	67,504	3,009,419	585,165	6,061,979	1,598,460
2024	3,729,299	3,546,871	1,001,497	273,521	1,651,671	67,558	3,011,915	585,570	5,807,357	1,549,181
2025	3,728,656	3,488,129	1,003,136	275,802	1,654,375	67,543	3,011,231	585,460	5,847,851	1,556,972
2026	3,729,657	3,548,224	1,014,720	289,515	1,673,486	67,567	3,012,299	585,632	6,091,638	1,604,704
2027	3,728,200	3,419,147	999,245	271,244	1,647,955	67,533	3,010,749	585,381	5,766,816	1,541,087
2028	3,730,599	3,653,939	993,117	262,729	1,637,845	67,588	3,013,289	585,794	5,615,651	1,511,999
2029	3,727,929	3,476,237	1,012,201	287,181	1,669,332	67,527	3,010,469	585,335	6,050,036	1,596,297
2030	3,726,684	3,519,623	1,012,824	288,474	1,670,359	67,498	3,009,153	585,122	6,072,924	1,600,553
2031	3,731,301	3,423,839	987,347	255,381	1,628,323	67,605	3,014,030	585,914	5,485,117	1,486,650
2032	3,730,868	3,653,751	1,013,315	287,286	1,671,169	67,595	3,013,572	585,840	6,052,112	1,597,194
2033	3,726,150	3,484,763	997,683	270,208	1,645,380	67,485	3,008,589	585,030	5,748,263	1,537,125
2034	3,729,106	3,518,872	996,865	267,947	1,644,029	67,554	3,011,710	585,537	5,708,281	1,529,820
2035	3,730,725	3,551,147	1,028,769	306,217	1,696,666	67,592	3,013,432	585,816	6,388,533	1,662,806
Total	189,334,539	155,834,837	51,222,614	14,134,749	84,776,471	3,424,906	141,518,199	28,458,525	299,019,396	79,035,952

Table B-16A

Minimum 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	3,219	42,918
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	378,875
1966	0	0	0	0	0	0	0	0	31,321	408,396
1967	0	0	0	0	0	0	0	0	47,718	634,505
1968	8,821	972,734	9,504	1,218,520	0	0	0	0	46,945	2,745,159
1969	11,704	1,295,607	12,610	1,654,809	0	0	0	0	52,963	4,074,937
1970	14,623	1,624,569	15,746	2,069,926	0	0	0	0	69,744	4,676,285
1971	24,302	2,716,584	26,118	3,421,554	0	0	54	54	55,532	6,185,714
1972	89,131	8,038,463	68,369	10,035,858	0	0	40	40	80,412	12,998,870
1973	117,779	9,890,316	78,313	12,289,297	0	0	1	1	54,219	15,194,233
1974	128,169	11,581,491	83,453	14,166,551	0	0	143	143	76,783	17,372,560
1975	147,899	13,584,548	101,893	16,593,957	0	0	1,069	1,069	84,547	20,517,423
1976	158,664	12,862,489	94,799	16,037,418	0	0	139	139	106,717	20,027,212
1977	178,774	16,203,699	121,966	19,892,685	0	0	892	892	98,618	24,213,491
1978	186,384	17,811,770	132,435	21,568,748	0	0	39	39	100,786	26,012,788
1979	186,688	16,414,289	126,756	20,238,759	0	0	3,235	3,235	119,352	24,675,595
1980	248,399	20,926,898	154,096	25,901,707	0	0	416	416	178,812	32,038,398
1981	259,244	23,731,024	186,592	29,224,859	0	0	3,847	3,847	185,347	35,516,365
1982	307,955	27,994,510	209,141	34,323,372	0	0	11,075	11,075	173,894	41,611,654
1983	394,524	38,953,367	326,258	47,754,649	0	0	1,928	1,928	220,926	56,802,779
1984	496,808	45,597,671	382,104	56,371,786	0	0	3,765	3,765	225,959	67,072,552
1985	531,765	50,064,444	416,652	61,532,075	0	0	2,888	2,888	340,322	73,228,724
1986	551,066	52,858,915	442,334	64,885,109	0	0	2,787	2,787	279,227	76,682,112
1987	564,352	50,737,631	411,276	62,892,289	0	0	2,388	2,388	345,116	75,240,983
1988	593,787	51,262,231	406,248	63,712,843	0	0	545	545	365,207	76,126,694
1989	576,852	52,638,942	431,020	64,815,348	0	0	1,800	1,800	422,329	78,708,338
1990	667,687	61,053,824	494,721	75,175,234	0	0	788	788	474,284	91,448,066
1991	666,471	59,449,434	470,139	73,996,291	0	0	3,654	3,654	214,683	89,159,276
1992	642,651	66,017,998	502,131	80,441,146	0	0	647	647	443,676	98,121,996
1993	770,181	66,928,046	538,751	83,506,628	0	0	3,630	3,630	599,571	104,871,673
1994	775,083	63,644,585	474,133	79,714,146	0	0	2,279	2,279	609,932	100,901,997
1995	779,030	67,884,249	523,512	84,827,394	0	0	2,906	2,906	534,971	107,126,355
1996	767,142	72,550,693	561,100	89,660,774	0	0	8,007	8,007	571,857	113,317,245
1997	917,372	75,655,465	564,455	94,454,556	0	0	7,449	7,449	428,638	114,938,383
1998	1,012,860	81,557,500	615,878	104,047,812	0	0	910	910	465,140	130,591,754
1999	1,268,010	99,635,795	640,080	123,864,610	0	0	1,285	1,285	524,491	151,797,667
2000	1,261,581	100,144,787	724,299	127,024,887	0	0	4,431	4,431	0	156,660,710
2001	1,232,110	95,619,971	701,472	121,715,018	0	0	4,400	4,400	0	150,392,040
2002	985,170	86,843,854	664,637	110,417,077	0	0	4,415	4,415	0	137,960,170
2003	940,397	83,950,720	660,227	106,713,849	0	0	4,524	4,524	0	134,014,592
2004	940,211	82,667,054	648,633	105,184,782	0	0	4,524	4,524	0	131,753,748
2005	1,007,781	86,172,966	660,855	109,537,795	0	0	4,524	4,524	0	136,098,218
2006	929,437	81,892,726	645,816	104,254,382	0	0	4,524	4,524	0	130,796,245
2007	966,126	83,754,284	649,918	106,568,872	0	0	4,524	4,524	0	133,114,742
2008	949,584	83,330,465	651,432	105,959,604	0	0	4,524	4,524	0	132,508,086
2009	965,847	83,873,321	652,400	106,699,752	0	0	4,524	4,524	0	133,250,997
2010	953,833	83,793,663	651,284	106,469,437	0	0	4,524	4,524	0	133,013,499
2011	970,948	84,168,800	655,224	107,098,252	0	0	4,524	4,524	0	133,755,782
2012	961,705	83,978,560	653,819	106,794,067	0	0	4,524	4,524	0	133,453,780
2013	936,859	84,128,443	658,009	106,681,035	0	0	4,524	4,524	0	133,355,474
2014	985,727	84,682,059	656,298	107,813,855	0	0	4,524	4,524	0	134,511,199
2015	938,516	83,688,903	655,033	106,259,836	0	0	4,524	4,524	0	132,956,483
2016	992,102	85,144,091	659,663	108,363,268	0	0	4,524	4,524	0	135,054,317
2017	957,899	84,803,034	658,270	107,616,059	0	0	4,524	4,524	0	134,310,747
2018	967,951	84,540,417	658,244	107,481,575	0	0	4,524	4,524	0	134,193,557
2019	992,572	86,109,146	662,494	109,353,730	0	0	4,524	4,524	0	136,055,260
2020	960,132	84,369,764	660,574	107,221,674	0	0	4,524	4,524	0	133,919,058
2021	931,482	83,213,890	653,394	105,690,438	0	0	4,524	4,524	0	132,380,235
2022	963,503	84,916,061	654,502	107,786,107	0	0	4,524	4,524	0	134,496,255
2023	990,529	84,913,444	656,722	108,099,301	0	0	4,524	4,524	0	134,788,903
2024	958,183	85,280,105	663,905	108,126,633	0	0	4,524	4,524	0	134,826,469
2025	963,304	83,012,109	648,455	105,843,023	0	0	4,524	4,524	0	132,540,167
2026	994,557	86,661,392	664,245	109,937,636	0	0	4,524	4,524	0	136,638,952
2027	952,905	80,460,559	630,299	103,081,120	0	0	4,524	4,524	0	129,776,306
2028	933,788	87,780,928	692,057	110,479,323	0	0	4,524	4,524	0	137,184,821
2029	989,089	83,716,142	645,355	106,833,130	0	0	4,524	4,524	0	133,527,022
2030	991,907	85,139,368	656,843	108,341,332	0	0	4,524	4,524	0	135,029,790
2031	917,162	81,278,235	631,396	103,492,300	0	0	4,524	4,524	0	130,200,914
2032	989,608	88,416,624	691,995	111,770,929	0	0	4,524	4,524	0	138,477,606
2033	950,357	83,319,595	647,682	105,988,310	0	0	4,524	4,524	0	132,674,450
2034	945,501	83,963,602	656,535	106,625,359	0	0	4,524	4,524	0	133,324,410
2035	1,032,604	87,675,261	664,968	111,404,536	0	0	4,524	4,524	0	138,110,409
Total	49,345,144	4,309,544,124	33,369,537	5,439,018,993	0	0	231,144	231,144	8,688,759	6,760,920,472

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	340,762	284,184	1,110,780	1,735,726	672	(94)	578
1997	48,518	193,255	241,773	455,751	294,951	1,220,497	1,971,199	44,788	298,986	343,774
1998	81,873	249,865	331,738	457,306	378,235	1,097,720	1,933,261	197,308	1,022,685	1,219,993
1999	60,230	203,023	263,253	614,923	463,696	1,079,232	2,157,851	152,820	822,159	974,979
2000	126,899	135,084	261,983	859,816	413,670	925,678	2,199,164	115,835	957,062	1,072,897
2001	137,853	169,946	307,799	622,074	456,292	1,223,501	2,301,867	741,977	1,349,983	2,091,960
2002	136,460	177,043	313,503	595,069	441,761	1,184,538	2,221,368	718,348	1,306,992	2,025,340
2003	131,780	169,991	301,771	572,085	434,859	1,119,325	2,126,269	678,801	1,235,037	1,913,838
2004	129,403	165,944	295,347	561,055	418,032	1,076,013	2,055,100	652,535	1,187,248	1,839,783
2005	136,103	171,045	307,148	753,715	465,530	1,108,405	2,327,650	672,179	1,222,989	1,895,168
2006	136,492	168,631	305,123	742,614	458,673	1,092,079	2,293,366	662,278	1,204,975	1,867,253
2007	136,192	165,460	301,652	728,202	449,772	1,070,885	2,248,859	649,425	1,181,590	1,831,015
2008	163,177	195,005	358,182	857,699	529,755	1,261,323	2,648,777	764,914	1,391,714	2,156,628
2009	163,842	192,656	356,498	846,841	523,049	1,245,354	2,615,244	755,230	1,374,095	2,129,325
2010	164,494	190,370	354,864	836,276	516,523	1,229,817	2,582,616	745,807	1,356,952	2,102,759
2011	165,205	188,225	353,430	826,342	510,388	1,215,209	2,551,939	736,949	1,340,834	2,077,783
2012	166,349	186,635	352,984	818,857	505,764	1,204,201	2,528,822	730,273	1,328,688	2,058,961
2013	76,606	84,861	161,467	372,097	229,825	547,201	1,149,123	331,844	603,769	935,613
2014	27,402	29,835	57,237	130,739	80,750	192,263	403,752	116,595	212,138	328,733
2015	12,468	13,163	25,631	57,646	35,605	84,773	178,024	51,410	93,537	144,947
2016	7,958	8,167	16,125	35,768	22,092	52,600	110,460	31,899	58,038	89,937
2017	5,310	5,302	10,612	23,218	14,341	34,144	71,703	20,706	37,674	58,380
2018	5,435	5,283	10,718	23,138	14,291	34,026	71,455	20,635	37,544	58,179
2019	5,548	5,254	10,802	23,009	14,212	33,837	71,058	20,520	37,335	57,855
2020	5,681	5,251	10,932	22,997	14,204	33,818	71,019	20,509	37,314	57,823
2021	3,466	3,191	6,657	13,974	8,631	20,550	43,155	12,462	22,674	35,136
2022	3,475	3,199	6,674	14,009	8,653	20,601	43,263	12,493	22,731	35,224
2023	5,609	5,164	10,773	22,614	13,967	33,256	69,837	20,167	36,694	56,861
2024	5,608	5,163	10,771	22,610	13,965	33,250	69,825	20,164	36,688	56,852
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	3,205,427	4,868,627	8,074,054	18,346,082	13,777,682	42,076,406	74,200,170	9,699,543	19,983,961	29,683,504

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

	San Joaquin Valley Area							
			Kern County Water Agency					
Calendar Year	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	382,688	12,550	958,123	8,683,413	26,880	22,476	1,591,881	11,678,011
1997	423,144	(6)	794,476	7,471,645	(31)	22,025	137,304	8,848,557
1998	469,452	4,572	837,228	8,311,511	127	25,321	174,427	9,822,638
1999	374,310	19,914	922,656	8,004,226	25,081	20,830	1,816,685	11,183,702
2000	290,757	21,253	573,664	6,116,917	16,258	15,844	931,999	7,966,692
2001	243,257	13,674	593,467	5,122,763	18,232	17,719	540,115	6,549,227
2002	235,510	13,238	574,567	4,959,625	17,651	17,155	522,915	6,340,661
2003	222,545	12,510	556,769	4,687,064	16,679	16,211	494,127	6,005,905
2004	213,933	12,025	535,225	4,505,701	16,034	15,583	475,007	5,773,508
2005	220,374	12,388	551,337	4,641,338	16,517	16,052	489,306	5,947,312
2006	217,128	12,205	543,216	4,572,973	16,273	15,816	482,099	5,859,710
2007	212,914	11,968	532,674	4,484,226	15,958	15,509	472,743	5,745,992
2008	250,777	14,097	627,400	5,281,665	18,795	18,267	556,812	6,767,813
2009	247,602	13,918	619,457	5,214,798	18,557	18,036	549,762	6,682,130
2010	244,513	13,744	611,729	5,149,739	18,326	17,811	542,904	6,598,766
2011	241,608	13,581	604,463	5,088,569	18,108	17,599	536,455	6,520,383
2012	239,420	13,458	598,987	5,042,474	17,944	17,440	531,595	6,461,318
2013	108,795	6,116	272,186	2,291,352	8,154	7,925	241,562	2,936,090
2014	38,226	2,149	95,634	805,082	2,865	2,784	84,875	1,031,615
2015	16,855	947	42,167	354,979	1,263	1,228	37,423	454,862
2016	10,458	588	26,164	220,258	784	762	23,220	282,234
2017	6,789	382	16,984	142,975	509	494	15,073	183,206
2018	6,765	380	16,925	142,481	507	493	15,021	182,572
2019	6,728	378	16,831	141,690	504	490	14,937	181,558
2020	6,724	378	16,822	141,611	504	490	14,929	181,458
2021	4,086	230	10,222	86,051	306	298	9,072	110,265
2022	4,096	230	10,247	86,266	307	298	9,094	110,538
2023	6,612	372	16,542	139,255	496	482	14,681	178,440
2024	6,611	372	16,539	139,232	495	482	14,678	178,409
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	9,626,571	455,412	22,610,390	207,447,842	639,929	659,722	19,670,609	261,110,475

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	3,355,414	1,413,141	4,382,187	34,086	7,227,837	29,381	508,426	680,648	426,812	1,125,748
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	3,956,572	1,590,783	7,514,235	16,535	6,140,791	30,201	505,512	654,264	166,053	823,194
1999	3,838,015	1,759,511	3,317,602	74,396	3,818,397	19,003	520,618	737,787	846,094	1,428,054
2000	3,101,663	1,340,419	2,003,439	101,774	2,756,616	82,844	509,732	834,127	1,183,422	716,680
2001	5,590,153	3,838,276	1,103,586	277,091	1,820,201	92,900	3,610,217	860,334	4,901,643	1,375,900
2002	5,412,131	3,716,044	1,068,442	268,267	1,762,235	89,941	3,495,247	832,936	4,745,546	1,332,083
2003	5,114,175	3,511,463	1,009,620	253,498	1,665,218	84,990	3,302,822	787,080	4,484,288	1,258,748
2004	4,916,285	3,375,589	970,554	243,689	1,600,784	81,701	3,175,021	756,625	4,310,771	1,210,041
2005	5,064,282	3,211,300	999,771	251,025	1,648,973	84,161	1,288,371	779,402	4,440,540	1,246,467
2006	4,989,688	3,407,806	985,045	247,327	1,624,684	82,921	1,482,607	767,922	4,375,133	1,228,108
2007	4,892,854	3,610,630	965,928	242,527	1,593,154	81,312	1,662,910	753,019	4,290,226	1,204,274
2008	5,762,960	4,252,716	1,137,701	285,657	1,876,468	95,772	2,204,884	886,930	5,053,165	1,418,432
2009	5,689,999	4,198,876	1,123,297	282,040	1,852,711	94,559	2,420,107	875,701	4,989,191	1,400,475
2010	5,619,012	4,146,491	1,109,283	278,521	1,829,597	93,380	2,630,019	864,776	4,926,947	1,383,003
2011	5,552,267	4,097,238	1,096,107	275,213	1,807,865	92,270	2,836,031	854,504	4,868,423	1,366,575
2012	5,501,972	4,060,123	1,086,178	272,720	1,791,488	91,435	3,045,445	846,763	4,824,322	1,354,196
2013	2,500,153	1,844,962	493,570	123,927	814,071	41,549	1,490,715	384,778	2,192,222	615,361
2014	878,446	648,240	173,419	43,543	286,029	14,598	567,315	135,194	770,252	216,211
2015	387,327	285,824	76,465	19,199	126,117	6,437	250,142	59,610	339,622	95,332
2016	240,329	177,348	47,445	11,913	78,253	3,994	155,209	36,987	210,729	59,152
2017	156,004	115,121	30,798	7,733	50,796	2,593	100,750	24,009	136,790	38,397
2018	155,465	114,723	30,691	7,706	50,621	2,584	100,402	23,926	136,317	38,264
2019	154,602	114,087	30,521	7,663	50,340	2,569	99,845	23,794	135,560	38,052
2020	154,516	114,023	30,504	7,659	50,312	2,568	99,789	23,780	135,485	38,031
2021	93,892	69,287	18,536	4,654	30,572	1,560	60,637	14,450	82,328	23,110
2022	94,127	69,460	18,582	4,666	30,649	1,564	60,789	14,486	82,534	23,167
2023	151,944	112,126	29,996	7,532	49,474	2,525	98,128	23,385	133,230	37,398
2024	151,920	112,108	29,991	7,530	49,466	2,525	98,113	23,381	133,209	37,392
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	123,805,046	74,496,092	56,270,937	5,136,351	81,190,241	1,922,429	42,245,060	18,878,598	74,983,794	34,404,019

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 (37)
	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)	
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	33,951,986	(75)	53,135,591	0	0	0	0	66,801,759
1997	0	37,121,379	108,559	54,131,368	0	0	0	0	65,536,671
1998	0	30,178,252	148,367	51,724,759	0	0	0	0	65,032,389
1999	0	43,869,737	110,278	60,339,492	0	0	0	0	74,919,277
2000	0	69,981,909	214,676	82,827,301	0	0	0	0	94,328,037
2001	191,097	68,636,051	866,638	93,164,087	0	0	0	0	104,414,940
2002	185,012	67,412,677	839,039	91,159,600	0	0	0	0	102,060,472
2003	218,533	56,470,196	792,847	78,953,478	0	0	0	0	89,301,261
2004	252,092	57,675,705	762,168	79,331,025	0	0	0	0	89,294,763
2005	302,961	67,095,524	785,112	87,197,889	0	0	0	0	97,675,167
2006	319,820	67,118,706	773,548	87,403,315	0	0	0	0	97,728,767
2007	723,401	66,807,978	758,536	87,586,749	0	0	0	0	97,714,267
2008	852,044	79,856,786	893,428	104,576,943	0	0	0	0	116,508,343
2009	841,257	79,999,202	882,117	104,649,532	0	0	0	0	116,432,729
2010	830,762	80,140,182	871,112	104,723,085	0	0	0	0	116,362,090
2011	820,894	80,313,757	860,764	104,841,908	0	0	0	0	116,345,443
2012	813,458	80,701,557	852,967	105,242,624	0	0	0	0	116,644,709
2013	369,644	37,178,428	387,597	48,436,977	0	0	0	0	53,619,270
2014	129,877	13,240,962	136,185	17,240,271	0	0	0	0	19,061,608
2015	57,266	5,916,759	60,047	7,680,147	0	0	0	0	8,483,611
2016	35,532	3,719,955	37,258	4,814,104	0	0	0	0	5,312,860
2017	23,065	2,446,345	24,185	3,156,586	0	0	0	0	3,480,487
2018	22,985	2,469,402	24,102	3,177,188	0	0	0	0	3,500,112
2019	22,858	2,487,040	23,968	3,190,899	0	0	0	0	3,512,172
2020	22,845	2,516,975	23,954	3,220,441	0	0	0	0	3,541,673
2021	13,882	1,539,619	14,556	1,967,083	0	0	0	0	2,162,296
2022	13,917	1,543,469	14,592	1,972,002	0	0	0	0	2,167,701
2023	22,465	2,491,536	23,556	3,183,295	0	0	0	0	3,499,206
2024	22,461	2,491,136	23,552	3,182,784	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	7,108,128	1,949,202,734	11,723,727	2,481,367,156	0	0	0	0	2,854,435,359

a) Costs allocated to contractors in 1989 through 1998 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	5.7570017	5.7570017	3.3315620	4.8750942	1.5435322	1.5435322
1969	0	0	0	0	3.1823595	3.1823595	3.6949019	4.8016170	1.1067151	1.1067151
1970	0	0	0	0	3.7584301	3.7584301	4.4256141	5.3721490	0.9465349	0.9465349
1971	0	0	0	0	4.2082507	4.2082507	3.8714396	4.7522833	0.8808437	0.8808437
1972	0	0	0	0	3.9577735	3.9577735	4.3250690	5.2281686	0.9030996	0.9030996
1973	0	0	0	0	3.8103903	3.8103903	5.2455409	6.1841800	0.9386391	0.9386391
1974	0	0	0	0	3.5878850	3.5878850	6.3321503	7.2293909	0.8972406	0.8972406
1975	0	0	0	0	2.1606725	2.1606725	3.7365711	4.8327731	1.0962020	1.0962020
1976	0	0	0	0	2.9283909	2.9283909	4.5191527	5.7132795	1.1941268	1.1941268
1977	0	0	0	0	2.7516411	2.7516411	4.7630172	6.5309908	1.7679736	1.7679736
1978	0	0	0	0	3.5949619	3.5949619	5.2086183	6.8200209	1.6114026	1.6114026
1979	0	0	0	0	2.4747752	2.4747752	4.9524184	7.0944849	2.1420665	2.1420665
1980	0	0	0	0	2.9737588	2.9737588	4.5186576	5.8810391	1.3623815	1.3623815
1981	0	0	0	0	2.6488168	2.6488168	4.3834851	6.4541818	2.0706967	2.0706967
1982	0	0	0	0	10.0222589	10.0222589	5.6383622	7.4005197	1.7621575	1.7621575
1983	0	0	0	0	1.0240490	1.0240490	0.8686401	1.7143947	0.8457546	0.8457546
1984	0	0	0	0	1.6496750	1.6496750	2.7674018	3.9368186	1.1694168	1.1694168
1985	0	0	0	0	2.5224065	2.5224065	3.6942206	5.2987621	1.6045415	1.6045415
1986	0	0	0	0	4.4049446	4.4049446	7.2799222	10.5919299	3.3120077	3.3120077
1987	0	0	0	0	3.5386715	3.5386715	6.4837861	9.2276309	2.7438448	2.7438448
1988	1.1782643	1.1782643	0	1.1782643	4.4547478	5.6330121	6.1750026	8.8623075	2.6873049	2.6873049
1989	1.2715449	1.2715449	2.5423866	3.8139315	4.2807103	5.5522552	8.1617218	11.6840191	3.5222973	3.5222973
1990	2.0026083	2.0026083	4.2324041	6.2350124	5.8753602	7.8779685	11.7200790	15.8516543	4.1315753	4.1315753
1991	1.2486830	1.2486830	2.6246433	3.8733263	3.8057971	5.0544801	7.5402615	11.2354100	3.6951485	3.6951485
1992	0.7094386	0.7094386	1.4175705	2.1270091	2.3509123	3.0603509	4.0600958	6.3925273	2.3324315	2.3324315
1993	-0.3461962	-0.3461962	-0.6037801	-0.9499763	-1.0200530	-1.3662492	-1.4929934	-1.2571378	0.2358556	0.2358556
1994	1.4521343	1.4521343	2.6761886	4.1283229	4.2851885	5.7373228	7.9485522	11.2384516	3.2898994	3.2898994
1995	0.7544766	0.7544766	1.2974265	2.0519031	2.2753763	3.0298529	3.2312761	5.2610469	2.0297708	2.0297708
1996	1.6427835	1.6427835	2.7704025	4.4131860	4.7993051	6.4420886	8.0186492	11.3633990	3.3447498	3.3447498
1997	1.7801484	1.7801484	3.0246843	4.8048327	5.0575904	6.8377388	9.6521246	12.6148371	2.9627125	2.9627125
1998	-0.3031174	-0.3031174	-0.5212041	-0.8243215	-0.8497854	-1.1529028	-1.7656471	-1.6140875	0.1515596	0.1515596
1999	0.9007020	0.9007020	1.2950808	2.1957828	1.8196644	2.7203664	5.5499024	7.7609524	2.2110500	2.2110500
2000	4.5708248	4.5708248	6.0357666	10.6065914	10.3463273	14.9171521	13.8188958	18.7063723	4.8874765	4.8874765
2001	3.1940842	3.1940842	5.5800318	8.7741160	8.3679138	11.5619980	13.0457511	18.1250293	5.0792782	5.0792782
2002	3.7044879	3.7044879	6.3216174	10.0261053	9.6786300	13.3831179	15.3614518	20.9941470	5.6326952	5.6326952
2003	2.8671818	2.8671818	8.1025888	10.9697706	9.9107419	12.7779237	13.7566259	19.3510147	5.5943888	5.5943888
2004	2.5412467	2.5412467	7.2064179	9.7476646	8.7619181	11.3031648	12.1468406	16.7821159	4.6352753	4.6352753
2005	2.9394655	2.9394655	8.3414428	11.2809083	10.0480637	12.9875292	12.5492091	17.5725074	5.0232983	5.0232983
2006	3.0133719	3.0133719	8.5367164	11.5500883	10.2964382	13.3098101	12.9866480	18.2940904	5.3074424	5.3074424
2007	2.9600007	2.9600007	8.3746766	11.3346773	10.1115884	13.0715891	12.7415310	17.7047217	4.9631907	4.9631907
2008	2.6484493	2.6484493	7.4823383	10.1307876	9.0495829	11.6980322	11.3854064	16.4400130	5.0546066	5.0546066
2009	2.7608039	2.7608039	7.7856716	10.5464755	9.4271725	12.1879764	11.8484171	16.3747258	4.5263087	4.5263087
2010	2.9089995	2.9089995	8.1904478	11.0994473	9.9331316	12.8421311	12.4630388	18.1325462	5.6695074	5.6695074
2011	2.9148078	2.9148078	8.1938806	11.1086884	9.9542545	12.8690623	12.4682411	17.5631235	5.0948824	5.0948824
2012	3.0314865	3.0314865	8.5086070	11.5400935	10.3553223	13.3868088	12.9471628	17.8466290	4.8994662	4.8994662
2013	3.3642526	3.3642526	9.4324378	12.7966904	11.4911106	14.8553632	14.3528872	20.6220898	6.2692026	6.2692026
2014	3.6447581	3.6447581	10.2005473	13.8453054	12.4515854	16.0963435	15.5217613	21.0940819	5.5723206	5.5723206
2015	3.7155096	3.7155096	10.3691045	14.0846141	12.7085990	16.4241086	15.7781812	21.9831030	6.2049218	6.2049218
2016	3.7675879	3.7675879	10.4853731	14.2529610	12.8987071	16.6662950	15.9551394	23.0720317	7.1168923	7.1168923
2017	3.7179767	3.7179767	10.3193532	14.0373299	12.7405335	16.4585102	15.7024950	21.9456654	6.2431704	6.2431704
2018	3.8455558	3.8455558	10.6470149	14.4925707	13.2171030	17.0626588	16.2010938	22.3894918	6.1883980	6.1883980
2019	3.9591868	3.9591868	10.9350746	14.8942614	13.6520881	17.6112749	16.6394263	23.7475716	7.1081453	7.1081453
2020	3.7318188	3.7318188	10.2805473	14.0123661	12.9053604	16.6371792	15.6434075	21.9229551	6.2795476	6.2795476
2021	3.7281025	3.7281025	10.2619901	13.9900926	12.8929414	16.6210439	15.6152065	21.7557500	6.1405435	6.1405435
2022	3.5953826	3.5953826	9.8966667	13.4920493	12.4339532	16.0293358	15.0593027	20.7381834	5.6788807	5.6788807
2023	3.6189766	3.6189766	9.9615920	13.5805686	12.5154969	16.1344735	15.1580811	21.3090870	6.1510059	6.1510059
2024	3.4314030	3.4314030	10.2005473	13.6319503	10.5219756	13.9533786	15.5217613	20.9400505	5.4182892	5.4182892
2025	3.7532624	3.7532624	10.3311940	14.0844564	12.9799240	16.7331864	15.7205721	21.3560058	5.6354337	5.6354337
2026	3.7829413	3.7829413	10.4129353	14.1958766	13.0825835	16.8655248	15.8448803	22.8769600	7.0320797	7.0320797
2027	3.7172153	3.7172153	10.2319901	13.9492054	12.8552690	16.5724843	15.5695646	21.8611947	6.2916301	6.2916301
2028	3.7470135	3.7470135	10.3139801	14.0609936	12.9582883	16.7053018	15.6943687	22.1048440	6.4104753	6.4104753
2029	3.6919807	3.6919807	10.1625373	13.8545180	12.7680064	16.4599871	15.4638996	21.5822544	6.1183548	6.1183548
2030	3.7263874	3.7263874	10.2572637	13.9836511	12.8869826	16.6133700	15.6079831	21.9925303	6.3845472	6.3845472
2031	3.6675516	3.6675516	10.0953234	13.7628750	12.6835033	16.3510549	15.3615515	21.1146875	5.7531360	5.7531360
2032	3.7520842	3.7520842	10.3279602	14.0800444	12.9758848	16.7279690	15.7156505	22.0168409	6.3011904	6.3011904
2033	3.9697395	3.9697395	10.9271144	14.8968539	13.7285743	17.6983138	16.6272953	23.2788176	6.6515223	6.6515223
2034	3.8027770	3.8027770	10.4675124	14.2702894	13.1511698	16.9539468	15.9279629	22.1906114	6.2626485	6.2626485
2035	3.7133674	3.7133674	10.2213930	13.9347604	12.8419516	16.5553190	15.5534571	22.0967878	6.5433307	6.5433307

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	1.0732031	2.6167353	0	0	0	0	0	0	0	0
1969	0.7028165	1.8095316	0	0	0	0	0	0	0	0
1970	0.7813430	1.7278779	0.3333333	2.0612112	0	0	0	0	0	0
1971	0.4125312	1.2933749	1.3594550	2.6528299	4.9729730	7.6258029	0	0	0	0
1972	0.5662758	1.4693754	1.0808851	2.5502605	1.1418280	3.6920885	2.2892599	5.9813484	7.3206022	13.3019506
1973	0.5996892	1.5383283	0.9844807	2.5228090	1.2143719	3.7371809	2.1051633	5.8423442	7.4512435	13.2935877
1974	0.5736894	1.4709300	0.9223292	2.3932592	1.0924098	3.4856690	1.9449022	5.4305712	6.9004732	12.3310444
1975	0.4606980	1.5569000	0.8190849	2.3759849	0.9574493	3.3334342	1.9610412	5.2944754	6.9962702	12.2907456
1976	0.5163828	1.7105096	0.9626676	2.6731772	1.0211874	3.6943646	2.2275746	5.9219392	7.9384515	13.8603907
1977	0.6138931	2.3818667	1.0969170	3.4787837	1.3715867	4.8503704	2.9301764	7.7805468	9.9990004	17.7795472
1978	0.4545898	2.0659924	0.9606230	3.0266154	1.0432294	4.0698448	1.9779157	6.0477605	7.0810192	13.1287797
1979	0.6587934	2.8008599	1.1099369	3.9107968	1.2652451	5.1760419	2.6939701	7.8700120	9.6345625	17.5045745
1980	0.8021465	2.1645280	1.3516057	3.5161337	1.5041463	5.0202800	3.1923433	8.2126233	10.9860288	19.1986521
1981	1.0923907	3.1630874	1.2409168	4.4040042	1.3219771	5.7259813	2.9592932	8.6852745	9.9649551	18.6502296
1982	0.8326785	2.5948360	1.2041660	3.7990020	1.3723736	5.1713756	2.8986491	8.0700247	10.2096358	18.2796605
1983	0.3647859	1.2105405	0.7590265	1.9695670	0.8857383	2.8553053	1.7623405	4.6176458	5.5086367	10.1262825
1984	0.6581523	1.8275691	1.0533611	2.8809302	1.2188270	4.0997572	2.5407768	6.6405340	8.2344665	14.8750005
1985	0.8726163	2.4771578	1.4204831	3.8976409	1.6516291	5.5492700	3.4695783	9.0188483	11.8181234	20.8369717
1986	1.3996542	4.7116619	2.3713282	7.0829901	2.7567970	9.8397871	5.9534613	15.7932484	20.6010240	36.3942724
1987	1.2912643	4.0351091	2.2344385	6.2695476	2.5459999	8.8155475	5.3141190	14.1296665	17.7628277	31.8924942
1988	1.1947837	3.8820886	2.1129991	5.9950877	2.4017135	8.3968012	5.0055748	13.4023760	16.6001692	30.0025452
1989	1.4935226	5.0158199	2.6947446	7.7105645	3.0084211	10.7189856	6.5499538	17.2689394	22.1795336	39.4484730
1990	1.8962463	6.0278216	3.3080372	9.3358588	3.7483036	13.0841624	8.6832678	21.7674302	31.0405219	52.8079521
1991	1.0437991	4.7389476	2.1132495	6.8521971	2.4154810	9.2676781	5.6823745	14.9500526	20.4744695	35.4245221
1992	0.9002103	3.2326418	1.4836761	4.7163179	1.7077297	6.4240476	3.5445788	9.9686264	12.0459599	22.0145863
1993	0.1605206	0.3963762	-0.1405164	0.2558598	-0.1312944	0.1245654	-0.7754796	-0.6509142	-3.5828989	-4.2338131
1994	1.4220553	4.7119547	2.5074599	7.2194146	2.7989861	10.0184007	6.0684073	16.0868080	21.4679840	37.5547920
1995	0.7974861	2.8272569	1.3474564	4.1747133	1.4945529	5.6692662	3.1250716	8.7943378	10.7461772	19.5405150
1996	1.6726383	5.0173881	2.5952092	7.6125973	2.8425227	10.4551200	6.3087407	16.7638607	22.6420778	39.4059385
1997	1.2769880	4.2397005	2.5012144	6.7409149	2.6893394	9.4302543	6.2890095	15.7192638	23.0714697	38.7907335
1998	-0.2050857	-0.0535261	-0.3945877	-0.4481138	-0.4188957	-0.8670095	-0.9854414	-1.8524509	-3.5434867	-5.3959376
1999	0.6990132	2.9100632	1.5359127	4.4459759	1.6697239	6.1156998	4.6448409	10.7605407	15.5265655	26.2871062
2000	1.9731042	6.8605807	3.8965033	10.7570840	4.7462135	15.5032975	10.2666912	25.7699887	36.6575015	62.4274902
2001	2.0651603	7.1444385	3.6716297	10.8160682	4.4735868	15.2896550	9.6874594	24.9771144	34.5534137	59.5305281
2002	2.3903748	8.0230700	4.2515543	12.2746243	5.1786682	17.4532925	11.2154140	28.6687065	39.9956791	68.6643856
2003	2.3904380	7.9848268	4.2917545	12.2765813	4.4398415	16.7164228	10.6638199	27.3802427	40.4312827	67.8115254
2004	1.9702106	6.6054859	3.4050921	10.0105780	3.4996314	13.5102094	8.3854575	21.8956669	31.7460492	53.6417161
2005	2.3611452	7.3844435	4.1474421	11.5318856	4.2778799	15.8097655	10.2636656	26.0734311	38.8879393	64.9613704
2006	2.4161484	7.7235908	4.2488034	11.9723942	4.3825655	16.3549597	10.5149706	26.8699303	39.8402915	66.7102218
2007	2.3434438	7.3066345	4.1031388	11.4097733	4.2286611	15.6384344	10.1425284	25.7809628	38.4218437	64.2028065
2008	2.0896017	7.1442083	3.6609121	10.8051204	3.7726862	14.5778066	9.0485566	23.6263632	34.2771312	57.9034944
2009	2.1815763	6.7078850	3.8332525	10.5411375	3.9515305	14.4926680	9.4787107	23.9713787	35.9091939	59.8805726
2010	2.2862854	7.9557928	4.0116673	11.9674601	4.1343602	16.1018203	9.9162513	26.0180716	37.5645196	63.5825912
2011	2.2640032	7.3588856	3.9546512	11.3135368	4.0726158	15.3861526	9.7656288	25.1517814	36.9880139	62.1397953
2012	2.4011487	7.3006149	4.2332775	11.5338924	4.3662487	15.9001411	10.4754519	26.3755930	39.6898860	66.0654790
2013	2.6296649	8.8988675	4.6105150	13.5093825	4.7510455	18.2604280	11.3950121	29.6554401	43.1653773	72.8208174
2014	2.8443118	8.4166324	4.9868823	13.4035147	5.1389166	18.5424313	12.3253163	30.8677476	46.6896016	77.5573492
2015	2.8714675	9.0763893	5.0194060	14.0957953	5.1700100	19.2658053	12.3978205	31.6636258	46.9593988	78.6230246
2016	2.9616175	10.0785098	5.2193730	15.2978828	5.3831512	20.6810340	12.9151349	33.5961689	48.9331789	82.5293478
2017	2.8365472	9.0797176	4.9437133	14.0234309	5.0896534	19.1130843	12.2030120	31.3160963	46.2167306	77.5328269
2018	2.9839279	9.1723259	5.2422462	14.4145721	5.4039310	19.8185031	12.9625633	32.7810664	49.1072895	81.8883559
2019	3.0627221	10.1708674	5.3768559	15.5477233	5.5422843	21.0900076	13.2940389	34.3840465	50.3622033	84.7462498
2020	2.8648700	9.1444176	5.0201729	14.1645905	5.1729858	19.3375763	12.4068315	31.7444078	46.9978906	78.7422984
2021	2.8544296	8.9949731	4.9978281	13.9928012	5.1493563	19.1421575	12.3496233	31.4917808	46.7799593	78.2717401
2022	2.7642335	8.4431142	4.8481164	13.2912306	4.9964154	18.2876460	11.9839719	30.2716179	45.3975522	75.6691701
2023	2.7954173	8.9464232	4.9117326	13.8581558	5.0634820	18.9216378	12.1461583	31.0677961	46.0149587	77.0827548
2024	2.7301859	8.1484751	4.7076901	12.8561652	4.8381379	17.6943031	11.5926203	29.2869234	43.8879937	73.1749171
2025	2.8839700	8.5194037	5.0568170	13.5762207	5.2113068	18.7875275	12.4992251	31.2867526	47.3490571	78.6358097
2026	2.9012183	9.9332980	5.0826331	15.0159311	5.2372391	20.2531702	12.5608471	32.8140173	47.5812280	80.3952453
2027	2.8723916	9.1640217	5.0476217	14.2116434	5.2037233	19.4153667	12.4826297	31.8979964	47.2898826	79.1878790
2028	2.8700063	9.2804816	5.0260094	14.3064910	5.1785150	19.4850060	12.4196842	31.9046902	47.0456014	78.9502916
2029	2.8449167	8.9632715	4.9937989	13.9570704	5.1472759	19.1043463	12.3464621	31.4508084	46.7721797	78.2229881
2030	2.8496351	9.2341823	4.9871983	14.2213806	5.1379999	19.3593805	12.3220473	31.6814278	46.6747321	78.3561599
2031	2.8254242	8.5785602	4.9602529	13.5388131	5.1127160	18.6515291	12.2635311	30.9150602	46.4579618	77.3730220
2032	2.8546980	9.1558884	4.9857731	14.1416615	5.1349389	19.2766004	12.3133391	31.5899395	46.6385125	78.2284520
2033	3.0791534	9.7306757	5.4203058	15.1509815	5.5894049	20.7403864	13.4090843	34.1494707	50.8026854	84.9521561
2034	2.9043992	9.1670477	5.0802536	14.2473013	5.2335029	19.4808042	12.5507361	32.0315403	47.5401791	79.5717194
2035	3.0543208	9.5976515	5.5081679	15.1058194	5.7026059	20.8084253	13.7002847	34.5087100	51.9513945	86.4601045

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

	California Aqueduct (continued)									
	Reach 18A		Reach 22B		Reach 23		Reach 26A		Reach 29A	
	Alamo Power Plant		Pearblossom Pumping Plant		Mojave Siphon Power Plant		Devil Canyon Power Plant		Oso Pumping Plant	
Calendar Year	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	13.3019506	14.2519510	27.5539016	0	27.5539016	-2.3717647	25.1821369	1.4212193	14.7231699
1973	0	13.2935877	4.4326546	17.7262423	0	17.7262423	-8.4298618	9.2963805	1.0210537	14.3146414
1974	0	12.3310444	3.4431782	15.7742226	0	15.7742226	-5.1043660	10.6698566	0.9241725	13.2552169
1975	0	12.2907456	3.1739313	15.4646769	0	15.4646769	-5.6510611	9.8136158	0.9362287	13.2269743
1976	0	13.8603907	3.9391330	17.7995237	0	17.7995237	-6.4449941	11.3545296	0.8622774	14.7226681
1977	0	17.7795472	3.4988957	21.2784429	0	21.2784429	-11.6274558	9.6509871	0.9076172	18.6871644
1978	0	13.1287797	4.1377503	17.2665300	0	17.2665300	-8.1314274	9.1351026	0.7314697	13.8602494
1979	0	17.5045745	5.1961178	22.7006923	0	22.7006923	-9.5825772	13.1181151	0.9504526	18.4550271
1980	0	19.1986521	4.3918283	23.5904804	0	23.5904804	-8.3797007	15.2107797	1.4269064	20.6255585
1981	0	18.6502296	3.9973528	22.6475824	0	22.6475824	-6.7528590	15.8947234	1.5684309	20.2186605
1982	0	18.2796605	3.6829998	21.9626603	0	21.9626603	-6.9238898	15.0387705	1.4942585	19.7739190
1983	0	10.1262825	1.7205305	11.8468130	0	11.8468130	-23.7923457	-11.9455327	1.2818887	11.4081712
1984	0	14.8750005	2.4763871	17.3513876	0	17.3513876	-29.2940447	-11.9426571	1.7796296	16.6546301
1985	0	20.8369717	3.4967556	24.3337273	0	24.3337273	-30.7672356	-6.4335083	2.1683838	23.0053555
1986	-2.3583180	34.0359544	5.9864597	40.0224141	0	40.0224141	-29.2499580	10.7724561	3.2288411	39.6231135
1987	-2.5482255	29.3442687	5.0535029	34.3977716	0	34.3977716	-29.7006534	4.6971182	3.1272967	35.0197909
1988	-1.3847067	28.6178385	4.7392460	33.3570845	0	33.3570845	-29.0334518	4.3236327	2.9878581	32.9904033
1989	-1.1019487	38.3465243	6.4066114	44.7531357	0	44.7531357	-28.3706997	16.3824360	3.5262089	42.9746819
1990	-1.0673268	51.7406253	8.9787944	60.7194197	0	60.7194197	-28.8797266	31.8396931	3.6810660	56.4890181
1991	-1.5206590	33.9038631	6.0785417	39.9824048	0	39.9824048	-30.3294563	9.6529485	2.1853025	37.6098246
1992	-2.6080003	19.4065860	3.6219501	23.0285361	0	23.0285361	-29.7938993	-6.7653632	1.9048343	23.9194206
1993	-0.1885524	-4.4223655	-1.0192774	-5.4416429	0	-5.4416429	-30.6629489	-36.1045918	0.1569728	-4.0768403
1994	-0.1279266	37.4268654	6.4500766	43.8769420	0	43.8769420	-30.4781656	13.3987764	3.0563161	40.6111081
1995	-3.4425314	16.0979836	3.3643070	19.4622906	0	19.4622906	-30.3517624	-10.8894718	1.5724835	21.1129985
1996	-5.9839345	33.4220040	6.6794995	40.1015035	-2.3423415	37.7591620	-29.5900574	8.1691046	3.1318961	42.5378346
1997	-4.7847600	34.0059735	6.8397922	40.8457657	-3.8632009	36.9825648	-30.6066647	6.3759001	2.7928728	41.5836063
1998	-5.0614104	-10.4573480	-1.2355351	-11.6928831	-3.7700558	-15.4629389	-30.6550762	-46.1180151	-0.3008626	-5.6968002
1999	-5.0531440	21.2339622	4.4733619	25.7073241	-5.1871306	20.5201935	-30.5998489	-10.0796554	2.0972243	28.3843305
2000	-4.7010133	57.7264769	9.8280760	67.5545529	-7.0177057	60.5368472	-26.4439531	34.0928941	4.7401735	67.1676637
2001	-4.0651769	55.4653512	10.6637997	66.1291509	-7.7982208	58.3309301	-27.9333291	30.3976010	4.2613081	63.7918362
2002	-3.9701954	64.6941902	12.3428087	77.0369989	-7.7721025	69.2648964	-27.9321333	41.3327631	4.9310805	73.5954661
2003	-4.1864209	63.6251045	12.1444093	75.7695138	-5.9908164	69.7786974	-28.5571778	41.2215196	5.2561602	73.0676856
2004	-3.9329563	49.7087598	10.2457201	59.9544799	-5.7380145	54.2164654	-28.2085370	26.0079284	3.3762525	57.0179686
2005	-4.2890898	60.6722806	12.0500676	72.7223482	-5.9724063	66.7499419	-29.1557405	37.5942014	4.5611387	69.5225091
2006	-4.3285362	62.3816856	12.4945210	74.8762066	-6.0506594	68.8255472	-28.9356224	39.8899248	4.6049020	71.3151238
2007	-4.1341317	60.0686748	11.6737891	71.7424639	-5.7296305	66.0128334	-28.4463107	37.5665227	4.5976906	68.8004971
2008	-4.2469882	53.6565062	10.7334937	64.3899999	-5.9459063	58.4440936	-28.6315109	29.8125827	3.9555470	61.8590414
2009	-4.2260064	55.6545662	11.1858147	66.8403809	-5.9115188	60.9288621	-28.5050398	32.4238223	4.1748078	64.0553804
2010	-4.1687211	59.4138701	11.7000261	71.1138962	-5.8445330	65.2693632	-28.3050217	36.9643415	4.3635698	67.9461610
2011	-4.0870255	58.0527698	11.4617042	69.5144740	-5.7232890	63.7911850	-28.5431568	35.2480282	4.3111953	66.4509906
2012	-4.3135750	61.7519040	12.5567694	74.3086734	-6.1785771	68.1300963	-29.0720593	39.0580370	4.5376130	70.6030920
2013	-4.1131264	68.7076910	13.4666101	82.1743011	-5.8863537	76.2879474	-28.1690896	48.1188578	5.0025957	77.8234131
2014	-4.0859573	73.4713919	14.3759527	87.8473446	-5.8534189	81.9939257	-28.3714524	53.6224733	5.4952039	83.0525531
2015	-4.0600226	74.5630020	14.5549149	89.1179169	-5.8689042	83.2490127	-28.4361166	54.8128961	5.4759316	84.0989562
2016	-4.1978819	78.3314659	15.4113477	93.7428136	-6.1123428	87.6304708	-28.7890557	58.8414151	5.6251926	88.1545404
2017	-3.9820960	73.5507309	14.3729200	87.9236509	-5.8019742	82.1216767	-28.2320977	53.8895790	5.3587474	82.8915743
2018	-4.2297955	77.6585604	15.7296409	93.3882013	-6.4386497	86.9495516	-28.6984676	58.2510840	5.5209964	87.4093523
2019	-4.0002972	80.7459526	15.3469130	96.0928656	-5.9130591	90.1798065	-28.1518326	62.0279739	6.0031683	90.7494181
2020	-4.0432968	74.6990016	14.7273129	89.4263145	-6.0310089	83.3953056	-28.6477930	54.7475126	5.4181571	84.1604555
2021	-4.0386173	74.2331228	14.6751204	88.9082432	-6.0437067	82.8645365	-28.2332785	54.6312580	5.3841840	83.6559241
2022	-4.0635850	71.6055851	14.1413328	85.7469179	-6.0477723	79.6991456	-27.9120023	51.7871433	5.2729684	80.9421385
2023	-4.1160937	72.9666611	14.4372572	87.4039183	-6.1538735	81.2500448	-28.4124593	52.8375855	5.3058271	82.3885819
2024	-3.9904551	69.1844620	13.3924802	82.5769422	-5.9703287	76.6066135	-28.2026380	48.4039755	5.1710140	78.3459311
2025	-4.0600857	74.5757240	14.7293872	89.3051112	-6.0500502	83.2550610	-27.8794239	55.3756371	5.5074411	84.1432508
2026	-4.0360763	76.3591690	14.8945435	91.2537125	-6.0763864	85.1773261	-28.5670135	56.6103126	5.4917030	85.8869483
2027	-4.0601194	75.1277596	14.6894416	89.8172012	-6.0409966	83.7762046	-28.1725488	55.6036558	5.5170351	84.7049141
2028	-4.0179938	74.9322978	14.6922982	89.6245960	-6.0100246	83.6145714	-28.3503919	55.2641795	5.4435222	84.3938138
2029	-4.0379449	74.1850432	14.5305620	88.7156052	-6.0438780	82.6717272	-28.1575469	54.5141803	5.4523730	83.6753611
2030	-4.0060133	74.3501466	14.5620813	88.9122279	-5.9885779	82.9236500	-28.2205324	54.7031176	5.4049379	83.7610978
2031	-4.1171286	73.2558934	14.6430752	87.8989686	-6.4466802	81.4522884	-27.9778886	53.4743998	5.3215815	82.6946035
2032	-3.9617350	74.2667170	14.3064244	88.5731414	-6.1453282	82.4278132	-27.7710850	54.6567282	5.5007476	83.7291996
2033	-4.1615745	80.7905816	16.0442204	96.8348020	-6.5916064	90.2431956	-28.6064837	61.6367119	5.8157542	90.7679103
2034	-3.9988908	75.5728286	14.6436096	90.2164382	-6.2775136	83.9389246	-27.6402475	56.2986771	5.5846396	85.1563590
2035	-4.2159071	82.2441974	15.2562963	97.5004937	-6.4640603	91.0364334	-29.1214924	61.9149410	6.6084109	93.0685154

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 Power Plant		Castaic Power Plant		Las Perillas and Badger Hill Pumping Plants		Devil's Den, Bluestone, and Polonio Pass Pumping Plants, and San Luis Obispo Power Plant	
	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	4.1182219	0	0
1969	0	0	0	0	1.2624066	3.0719382	0	0
1970	0	0	0	0	1.6309699	3.3588478	0	0
1971	0	0	0	0	1.4985537	2.7919286	0	0
1972	0	14.7231699	-2.9350830	11.7880869	1.9517720	3.4211474	0	0
1973	0	14.3146414	-6.8099448	7.5046966	1.5374531	3.0757814	0	0
1974	0	13.2552169	-7.4013274	5.8538895	1.5168982	2.9878282	0	0
1975	0	13.2269743	-6.5604921	6.6664822	1.1130304	2.6699304	0	0
1976	0	14.7226681	-6.7213324	8.0013357	1.5685447	3.2790543	0	0
1977	0	18.6871644	-30.4985994	-11.8114350	1.7573375	4.1392042	0	0
1978	0	13.8602494	-9.0130187	4.8472307	1.9429506	4.0089430	0	0
1979	0	18.4550271	-19.0478097	-0.5927826	1.5600341	4.3608940	0	0
1980	0	20.6255585	-20.5438586	0.0816999	1.5124754	3.6770034	0	0
1981	0	20.2186605	-10.0059379	10.2127226	1.5414199	4.7045073	0	0
1982	-2.1714430	17.6024760	-9.5987314	8.0037446	1.7581649	4.3530009	0	0
1983	-8.9130752	2.4950960	-39.8193120	-37.3242160	0.1782765	1.3888170	0	0
1984	-15.0246012	1.6300289	-17.3126964	-15.6826675	0.8546712	2.6822403	0	0
1985	-14.7115359	8.2938196	-38.9450629	-30.6512433	1.2014351	3.6785929	0	0
1986	-14.1893653	25.4337482	-28.1596224	-2.7258742	2.2635886	6.9752505	0	0
1987	-14.8696165	20.1501744	-27.0536484	-6.9034740	1.9135072	5.9486163	0	0
1988	-14.7032843	18.2871190	-25.6857024	-7.3985834	1.7733386	5.6554272	0	0
1989	-14.4231503	28.5515316	-25.3986130	3.1529186	2.4159040	7.4317239	0	0
1990	-14.1850383	42.3039798	-26.0776142	16.2263656	3.7962150	9.8240366	0	0
1991	-14.7118704	22.8979542	-25.0234633	-2.1255091	2.4131016	7.1520492	0	0
1992	-14.6199430	9.2994776	-25.1951357	-15.8956581	1.2766372	4.5092790	0	0
1993	-10.3386607	-14.4155010	-21.1218973	-35.5373983	-1.1726172	-0.7762410	0	0
1994	-14.7696788	25.8414293	-26.7437304	-0.9023011	2.3664839	7.0784386	0	0
1995	-12.2705974	8.8424011	-25.6907993	-16.8483982	2.5750402	5.4022971	0	0
1996	-14.8515762	27.6862584	-29.5639188	-1.8776604	2.5837041	7.6010922	0	0
1997	-14.9272063	26.6564000	-27.1541858	-0.4977858	2.7029648	6.9426653	24.4572499	31.3999152
1998	-8.6041243	-14.3009245	-22.2303491	-36.5312736	-0.4719744	-0.5255005	-3.9178748	-4.4433753
1999	-16.3046127	12.0797178	-27.4329455	-15.3532277	1.3379257	4.2479889	-0.5246185	3.7233704
2000	-16.1886505	50.9790132	-29.0828648	21.8961484	5.3882948	12.2488755	58.6146174	70.8634929
2001	-14.0472792	49.7445570	-25.1902845	24.5542725	4.2843245	11.4287630	31.9296444	43.3584074
2002	-13.9924457	59.6030204	-25.2783680	34.3246524	4.9487925	12.9718625	36.9589663	49.9308288
2003	-18.9527605	54.1149251	-31.1049276	23.0099975	5.2317348	13.2165616	35.2773063	48.4938679
2004	-13.8719806	43.1459880	-22.3824793	20.7635087	4.6224358	11.2279217	31.1688450	42.3967667
2005	-16.1072242	53.4152849	-25.9590122	27.4562727	5.2931047	12.6775482	35.6905287	48.3680769
2006	-15.6821945	55.6329293	-25.5095327	30.1233966	5.4169339	13.1405247	36.5262667	49.6667914
2007	-16.0776153	52.7228818	-25.9248099	26.7980719	5.3150396	12.6216741	35.8328949	48.4545690
2008	-15.5468985	46.3121429	-24.9718006	21.3403423	4.7486979	11.8929062	32.0147246	43.9076308
2009	-15.7768875	48.2784929	-25.3252185	22.9532744	4.9412015	11.6490865	33.3125690	44.9616555
2010	-15.5822163	52.3639447	-25.1271183	27.2368264	5.1981009	13.1538937	35.0445133	48.1984070
2011	-15.3793442	51.0716464	-24.7638260	26.3078204	5.2002758	12.5591614	35.0591530	47.6183144
2012	-15.5506941	55.0523979	-25.1412505	29.9111474	5.4000188	12.7006337	36.4057965	49.1064302
2013	-15.4347099	62.3887032	-24.9569106	37.4317926	5.9863236	14.8851911	40.3585250	55.2437161
2014	-15.6750672	67.3774859	-25.3152724	42.0622135	6.4738350	14.8904674	43.6452516	58.5357190
2015	-15.3907175	68.7082387	-24.8239838	43.8842549	6.5807829	15.6571722	44.3662480	60.0234202
2016	-15.6067079	72.5478325	-25.2062180	47.3416145	6.6545865	16.7330963	44.8638717	61.5969680
2017	-15.0720996	67.8194747	-24.3672094	43.4522653	6.5492181	15.6289357	44.1534414	59.7823771
2018	-15.0631813	72.3461710	-24.3580171	47.9881539	6.7571720	15.9294979	45.5554613	61.4849592
2019	-15.7254203	75.0239978	-25.6769372	49.3470606	6.9399981	17.1108655	46.7879997	63.8988652
2020	-15.2173826	68.9430729	-24.6939578	44.2491151	6.5245730	15.6689906	43.9873122	59.6563028
2021	-15.1239236	68.5320005	-24.5680067	43.9639938	6.5128146	15.5077877	43.9080031	59.4157908
2022	-15.3502235	65.5919150	-24.9484338	40.6434812	6.2809552	14.7240694	42.3448612	57.0689306
2023	-15.3459192	67.0426627	-24.9408885	42.1017742	6.3221536	15.2685768	42.6226343	57.8912111
2024	-15.4831869	62.8627442	-25.1678629	37.6948813	6.4738350	14.6223101	43.6452516	58.2675617
2025	-15.3585032	68.7847476	-24.9623190	43.8224286	6.5567583	15.0761620	44.2042774	59.2804394
2026	-15.1941970	70.6927513	-24.6915930	46.0011583	6.6086057	16.5419037	44.5538488	61.0957525
2027	-15.5340586	69.1708555	-25.2509500	43.9199055	6.4937792	15.6578009	43.7796826	59.4374835
2028	-15.2092184	69.1845954	-24.7123773	44.4722181	6.5458272	15.8263088	44.1306119	59.9569207
2029	-15.4574103	68.2179508	-25.1254534	43.0924974	6.4497039	15.4129754	43.4825596	58.8955350
2030	-15.1810108	68.5800870	-24.6699201	43.9101669	6.5097997	15.7439820	43.8877196	59.6317016
2031	-15.2674892	67.4271143	-24.7417004	42.6854139	6.4070200	14.9855802	43.1947721	58.1803523
2032	-15.2366608	68.4925388	-24.8898105	43.6027283	6.5547024	15.7105908	44.1904439	59.9010347
2033	-15.3041781	75.4637322	-24.9491563	50.5145759	6.9349337	16.6656094	46.7538827	63.4194921
2034	-15.2561675	69.9001915	-24.9307924	44.9693991	6.6432543	15.8103020	44.7874480	60.5977500
2035	-18.5579309	74.5105845	-30.3583958	44.1521887	6.4870538	16.0847053	43.7343631	59.8190684

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	121,141	192,606	0	0	0
1967	0	0	0	19,958	53,785	163,255	236,998	0	0	0
1968	6,989	0	6,989	29,899	120,985	341,768	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	49,687	0	431,443	481,130	0	0	0
1971	10,609	0	10,609	23,842	28,328	416,329	468,499	0	0	0
1972	14,434	0	14,434	54,838	144,669	524,208	723,715	0	0	0
1973	14,449	0	14,449	18,398	15,590	547,807	581,795	0	0	0
1974	17,473	0	17,473	9,499	29	636,186	645,714	0	0	0
1975	14,779	0	14,779	22,318	4,765	425,284	452,367	0	0	0
1976	20,856	0	20,856	97,874	121,693	502,769	722,336	0	0	0
1977	22,635	0	22,635	82,578	123,044	497,792	703,414	0	0	0
1978	21,692	0	21,692	74,911	39,986	652,860	767,757	0	0	0
1979	16,237	0	16,237	137,101	77,145	652,629	866,875	0	0	0
1980	19,945	0	19,945	98,743	64,891	517,531	681,165	0	0	0
1981	23,842	0	23,842	126,437	141,456	567,968	835,861	0	0	0
1982	12,157	0	12,157	97,117	46,742	651,246	795,105	0	0	0
1983	2,342	0	2,342	8,171	5,412	148,743	162,326	0	0	0
1984	4,822	0	4,822	26,707	13,141	349,314	389,162	0	0	0
1985	10,188	0	10,188	79,863	102,790	466,291	648,944	0	0	0
1986	15,501	0	15,501	112,370	131,118	932,090	1,175,578	0	0	0
1987	27,223	0	27,223	216,212	234,290	812,633	1,263,135	0	0	0
1988	31,264	11,559	42,823	229,575	297,129	779,537	1,306,241	0	0	0
1989	37,873	67,251	105,124	306,533	304,275	1,051,562	1,662,370	0	0	0
1990	54,737	105,421	160,158	524,089	502,545	1,456,008	2,482,642	0	0	0
1991	6,975	18,824	25,799	105,736	142,105	316,839	564,680	0	(2,636)	(2,636)
1992	12,344	23,551	35,895	93,772	122,436	273,849	490,057	0	0	0
1993	(7,222)	(17,294)	(24,516)	(36,162)	(12,912)	(78,024)	(127,098)	0	0	0
1994	38,968	77,344	116,312	231,756	257,484	641,884	1,131,124	0	0	0
1995	15,701	36,724	52,425	160,663	93,610	151,287	405,560	0	0	0
1996	31,526	96,570	128,096	214,883	186,694	735,431	1,137,008	502	0	502
1997	29,683	116,555	146,238	351,185	219,799	912,861	1,483,845	34,932	233,584	268,516
1998	(6,178)	(18,511)	(24,689)	(6,218)	(16,448)	(65,208)	(87,874)	(15,961)	(82,727)	(98,688)
1999	18,087	69,834	87,921	332,198	250,610	583,975	1,166,783	20,529	110,446	130,975
2000	231,440	235,389	466,829	1,324,011	637,578	1,426,471	3,388,060	279,131	2,306,252	2,585,383
2001	193,085	233,370	426,455	933,644	679,675	1,814,222	3,427,541	1,266,488	1,665,482	2,931,970
2002	228,517	272,124	500,641	1,060,391	784,471	2,099,415	3,944,277	1,248,271	2,271,154	3,519,425
2003	222,975	277,175	500,150	1,009,914	755,684	1,935,101	3,700,699	1,212,347	2,205,792	3,418,139
2004	201,479	250,184	451,663	883,990	653,762	1,678,212	3,215,964	1,059,919	1,928,459	2,988,378
2005	236,373	289,651	526,024	1,194,931	738,045	1,757,251	3,690,227	1,209,202	2,200,070	3,409,272
2006	246,564	296,794	543,358	1,243,998	768,352	1,829,409	3,841,759	1,241,670	2,259,144	3,500,814
2007	246,399	291,467	537,866	1,203,921	743,598	1,770,472	3,717,991	1,211,364	2,204,005	3,415,369
2008	224,310	260,703	485,013	1,117,921	690,481	1,644,001	3,452,403	1,097,691	1,997,182	3,094,873
2009	237,666	271,618	509,284	1,113,481	687,738	1,637,473	3,438,692	1,124,041	2,045,126	3,169,167
2010	254,595	286,079	540,674	1,233,013	761,567	1,813,255	3,807,835	1,204,960	2,192,353	3,397,313
2011	259,312	286,536	545,848	1,194,292	737,651	1,756,312	3,688,255	1,190,458	2,165,967	3,356,425
2012	274,095	297,891	571,986	1,213,571	749,558	1,784,663	3,747,792	1,227,661	2,233,655	3,461,316
2013	308,249	330,554	638,803	1,402,302	866,128	2,062,209	4,330,639	1,381,093	2,512,816	3,893,909
2014	340,035	357,929	697,964	1,434,398	885,951	2,109,408	4,429,757	1,463,393	2,662,556	4,125,949
2015	358,046	364,470	722,516	1,494,851	923,290	2,198,310	4,616,451	1,500,586	2,730,225	4,230,811
2016	373,742	368,995	742,737	1,568,898	969,025	2,307,203	4,845,126	1,539,924	2,801,800	4,341,724
2017	379,369	363,574	742,943	1,492,305	921,718	2,194,567	4,608,590	1,494,559	2,719,261	4,213,820
2018	403,958	375,518	779,476	1,522,485	940,359	2,238,949	4,701,793	1,537,124	2,796,705	4,333,829
2019	427,954	386,081	814,035	1,614,835	997,398	2,374,757	4,986,990	1,597,472	2,906,504	4,503,976
2020	414,266	363,375	777,641	1,490,761	920,764	2,192,296	4,603,821	1,491,408	2,713,527	4,204,935
2021	415,526	362,846	778,372	1,479,391	913,742	2,175,575	4,568,708	1,485,395	2,702,587	4,187,982
2022	400,733	349,929	750,662	1,410,196	871,004	2,073,818	4,355,018	1,426,723	2,595,837	4,022,560
2023	403,362	352,225	755,587	1,449,018	894,982	2,130,909	4,474,909	1,447,280	2,633,240	4,080,520
2024	348,834	349,150	697,984	1,423,923	879,482	2,094,005	4,397,410	1,456,689	2,650,358	4,107,047
2025	418,330	365,294	783,624	1,452,208	896,952	2,135,601	4,484,761	1,482,011	2,696,430	4,178,441
2026	421,638	368,184	789,822	1,555,633	960,832	2,287,696	4,804,161	1,527,394	2,779,001	4,306,395
2027	414,312	361,786	776,098	1,486,561	918,170	2,186,119	4,590,850	1,485,937	2,703,573	4,189,510
2028	417,633	364,686	782,319	1,503,129	928,403	2,210,484	4,642,016	1,498,923	2,727,200	4,226,123
2029	411,500	359,330	770,830	1,467,593	906,455	2,158,225	4,532,273	1,472,388	2,678,922	4,151,310
2030	415,334	362,679	778,013	1,495,492	923,686	2,199,253	4,618,431	1,490,793	2,712,408	4,203,201
2031	408,776	356,953	765,729	1,435,799	886,817	2,111,469	4,434,085	1,454,509	2,646,392	4,100,901
2032	418,199	365,180	783,379	1,497,145	924,707	2,201,684	4,623,536	1,497,526	2,724,658	4,222,184
2033	442,458	386,364	828,822	1,582,960	977,710	2,327,882	4,888,552	1,585,487	2,884,699	4,470,186
2034	423,849	370,114	793,963	1,508,962	932,006	2,219,061	4,660,029	1,514,944	2,756,349	4,271,293
2035	413,883	361,411	775,294	1,502,582	928,065	2,209,679	4,640,326	1,495,477	2,720,930	4,216,407
Total	12,798,876	12,483,436	25,282,312	52,971,027	34,650,729	90,826,598	178,448,354	48,940,240	90,389,286	139,329,526

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 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	68,977	5,176	0	0	440,922	2,355	4,760	65,680	587,870
1969	56,774	101	0	0	321,387	181	3,338	17,956	399,737
1970	69,818	6,811	0	0	470,867	0	5,595	16,550	569,641
1971	53,097	7,747	0	0	769,054	4,785	6,353	158,419	999,455
1972	62,365	8,515	0	0	1,151,788	2,057	7,375	379,686	1,611,786
1973	33,931	4,615	0	0	770,121	2,307	3,017	77,630	891,621
1974	49,114	4,413	0	46,752	677,660	2,206	3,114	106,332	889,591
1975	63,140	4,671	0	34,580	848,249	2,491	3,920	134,295	1,091,346
1976	70,851	5,132	0	94,653	966,820	2,737	4,910	100,597	1,245,700
1977	26,565	1,758	0	84,875	498,624	3,644	2,602	43,067	661,135
1978	108,944	938	0	190,675	1,616,975	4,319	6,294	24,901	1,953,046
1979	107,956	4,871	0	194,048	2,371,175	5,602	13,172	434,472	3,131,296
1980	88,746	1,935	0	121,603	1,731,588	4,762	7,766	163,301	2,119,701
1981	129,687	18,533	0	263,077	2,398,339	7,275	8,904	263,922	3,089,737
1982	108,561	937	0	145,246	2,375,404	4,541	6,763	48,137	2,689,589
1983	61,380	0	0	13,954	929,183	5,652	3,232	1,218	1,014,619
1984	82,423	0	0	216,437	1,996,259	5,946	7,475	10,496	2,319,036
1985	114,571	12,938	0	242,645	2,567,184	8,422	8,815	271,970	3,226,545
1986	236,756	5,513	0	377,798	4,876,960	17,433	16,927	376,113	5,907,500
1987	187,090	10,273	0	504,163	4,230,947	16,140	15,529	375,604	5,339,746
1988	188,170	14,894	0	524,953	4,249,840	15,528	11,928	374,528	5,379,841
1989	285,262	15,450	0	681,233	6,158,642	20,063	21,693	649,606	7,831,949
1990	218,786	7,710	0	844,382	4,778,185	12,056	12,072	344,008	6,217,199
1991	4,393	1,047	0	185,013	47,869	0	521	10,331	249,174
1992	76,840	4,409	0	224,775	1,699,824	6,491	5,222	151,055	2,168,616
1993	20,064	4,843	0	78,585	340,588	2,090	1,467	123,913	571,550
1994	135,671	7,857	0	471,391	3,418,219	9,971	10,103	293,847	4,347,059
1995	181,772	4,611	0	409,656	3,437,735	11,619	10,492	288,010	4,343,895
1996	286,064	9,577	0	715,404	6,328,965	21,039	16,403	1,196,303	8,573,755
1997	308,515	0	0	650,416	5,627,735	0	15,559	94,838	6,697,063
1998	19,652	(28)	0	63,221	63,450	(1)	1,318	(1,107)	146,505
1999	197,980	10,533	0	565,126	4,181,335	13,266	12,106	967,802	5,948,148
2000	441,691	32,286	0	872,865	9,398,085	24,698	25,141	1,415,804	12,210,570
2001	382,615	21,507	0	926,617	7,965,993	28,676	29,050	849,538	10,203,996
2002	428,191	24,069	0	1,039,950	8,935,926	32,092	32,106	950,734	11,443,068
2003	426,150	23,954	0	1,056,295	8,878,404	31,939	31,888	946,202	11,394,832
2004	352,535	19,816	0	870,504	7,326,010	26,422	26,421	782,750	9,404,458
2005	394,108	22,153	0	980,180	8,300,850	29,538	28,633	875,057	10,630,519
2006	412,208	23,171	0	1,023,433	8,645,917	30,894	30,252	915,246	11,081,121
2007	389,955	21,920	0	969,774	8,219,641	29,227	28,290	865,836	10,524,643
2008	381,286	21,433	0	941,257	7,896,308	28,577	28,811	846,589	10,144,261
2009	358,000	20,124	0	891,638	7,570,740	26,832	25,800	794,884	9,688,018
2010	424,601	23,867	0	1,046,898	8,766,667	31,823	32,316	942,761	11,268,933
2011	392,744	22,077	0	973,129	8,213,390	29,436	29,041	872,028	10,531,845
2012	389,634	21,902	0	971,685	8,259,605	29,202	27,927	865,123	10,565,078
2013	474,933	26,697	0	1,173,431	9,856,478	35,595	35,734	1,054,516	12,657,384
2014	449,196	25,250	0	1,122,247	9,574,235	33,667	31,762	997,371	12,233,728
2015	484,407	27,229	0	1,203,073	10,185,947	36,306	35,368	1,075,552	13,047,882
2016	537,890	30,236	0	1,329,024	11,151,908	40,314	40,566	1,194,303	14,324,241
2017	484,585	27,239	0	1,201,934	10,164,082	36,319	35,586	1,075,947	13,025,692
2018	489,527	27,517	0	1,219,233	10,352,429	36,689	35,274	1,086,921	13,247,590
2019	542,819	30,513	0	1,343,315	11,305,079	40,683	40,516	1,205,248	14,508,173
2020	488,038	27,433	0	1,211,401	10,242,639	36,578	35,793	1,083,613	13,125,495
2021	480,062	26,985	0	1,192,775	10,100,726	35,980	35,001	1,065,904	12,937,433
2022	450,609	25,329	0	1,122,728	9,541,146	33,772	32,370	1,000,509	12,206,463
2023	477,471	26,839	0	1,185,219	10,015,815	35,786	35,061	1,060,151	12,836,342
2024	434,884	24,445	0	1,083,864	9,251,186	32,594	30,884	965,594	11,823,451
2025	454,681	25,558	0	1,136,136	9,694,125	34,078	32,122	1,009,549	12,386,249
2026	530,140	29,800	0	1,308,564	10,977,324	39,733	40,083	1,177,096	14,102,740
2027	489,084	27,492	0	1,214,375	10,265,744	36,656	35,862	1,085,937	13,155,150
2028	495,299	27,841	0	1,228,053	10,368,475	37,122	36,540	1,099,737	13,293,067
2029	478,370	26,890	0	1,188,879	10,065,745	35,853	34,875	1,062,148	12,892,760
2030	492,828	27,703	0	1,221,644	10,312,432	36,937	36,392	1,094,251	13,222,187
2031	457,838	25,736	0	1,141,434	9,706,418	34,314	32,793	1,016,559	12,415,092
2032	488,650	27,468	0	1,212,066	10,245,395	36,624	35,917	1,084,973	13,131,093
2033	519,326	29,192	0	1,290,693	10,921,633	38,923	37,914	1,153,085	13,990,766
2034	489,245	27,501	0	1,215,317	10,290,581	36,668	35,697	1,086,295	13,181,304
2035	512,227	28,793	0	1,276,683	10,790,541	38,391	37,297	1,137,322	13,821,254
Total	20,079,742	1,113,745	0	48,330,974	416,099,512	1,433,915	1,453,828	44,358,613	532,870,329

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	30,401	0	0	0	0	0	0	0	0
1969	0	30,627	0	0	0	0	0	0	0	0
1970	0	39,430	0	0	0	0	0	0	0	0
1971	0	34,871	0	0	0	0	0	0	0	0
1972	780	47,571	0	12,785	0	4,496	1,515	0	32,107	0
1973	286	28,968	102,812	6,896	159,536	3,855	0	0	301,444	0
1974	15,558	28,982	100,955	9,890	157,742	4,932	221	0	177,173	6,530
1975	99,186	28,568	108,253	12,758	170,111	6,391	0	0	136,066	53,484
1976	385,090	38,365	135,276	17,835	213,594	8,164	0	0	139,354	68,933
1977	199,166	21,006	0	23,598	0	1,974	1,702	0	239,663	86,820
1978	581,729	45,550	174,116	20,875	264,178	2,731	0	0	37,043	70,989
1979	1,058,904	83,940	228,437	28,603	340,510	2,328	90,803	0	236	3,804
1980	1,390,117	51,143	256,759	29,229	401,038	3,667	94,362	0	0	16,504
1981	1,480,362	118,583	274,149	33,632	430,304	23,861	90,590	0	254,649	57,523
1982	923,973	132,575	292,674	27,190	461,216	0	230,608	0	126,461	189,895
1983	333,772	(335,734)	172,336	10,792	272,477	385	0	0	(71,602)	(8,768)
1984	485,847	(142,910)	273,597	19,572	433,785	15	0	0	(66,353)	(91,433)
1985	821,069	(335,343)	413,406	34,603	657,011	0	0	32,464	(47,544)	(32,348)
							0			
1986	1,109,046	54,812	728,808	60,274	1,160,650	5,548	0	105,375	69,170	101,843
1987	1,019,604	(39,907)	668,383	63,601	1,083,530	32,652	585	157,843	88,076	49,930
1988	1,019,790	(74,007)	688,891	66,914	1,134,141	11,991	300	50,654	92,465	38,688
1989	1,736,901	178,359	978,885	97,114	1,633,489	38,269	8,951	350,954	340,460	210,334
1990	2,442,558	422,502	1,402,619	110,934	2,313,410	90,468	0	446,355	599,573	530,099
1991	286,485	(3,054)	277,078	33,945	456,999	17,698	128,405	132,700	35,339	52,116
1992	587,340	(207,831)	240,119	11,952	396,022	4,871	241,338	78,306	(22,718)	(53,500)
1993	(190,611)	(491,161)	(809,033)	(2,389)	(1,334,429)	(3,246)	(61,112)	(29,466)	(157,452)	(519,798)
1994	1,839,643	65,577	188,950	34,443	311,615	41,151	730,391	315,059	122,398	204,063
1995	761,209	(247,735)	(251,547)	7,960	(414,889)	7,727	165,622	114,342	(7,579)	(140,714)
1996	1,883,530	72,171	508,274	18,313	838,330	16,510	289,044	385,745	49,537	133,848
1997	2,121,818	22,440	365,342	24,076	330,153	15,099	414,596	438,212	61,553	115,882
1998	(553,432)	(722,825)	(3,952,729)	(2,892)	(3,258,099)	(4,225)	(44,233)	(80,469)	(86,610)	(429,359)
1999	1,778,642	(282,460)	(240,082)	29,255	(276,323)	8,807	245,117	353,487	(61,229)	(53,256)
2000	4,473,802	780,467	1,442,914	130,154	1,985,366	119,494	728,358	1,203,135	852,322	516,166
2001	7,679,817	2,237,670	702,754	338,462	1,159,088	127,627	4,998,463	1,181,937	3,121,324	876,161
2002	8,953,676	3,096,885	954,787	401,736	1,574,778	148,797	5,820,890	1,377,986	4,240,741	1,190,384
2003	8,805,714	2,112,204	952,217	404,716	1,570,540	146,338	5,725,113	1,355,215	4,229,328	1,187,180
2004	6,879,692	1,900,401	600,783	314,456	990,902	114,330	4,529,181	1,058,797	2,668,413	749,028
2005	8,397,044	2,374,658	868,426	387,150	1,432,339	139,546	2,163,595	1,292,320	3,857,165	1,082,713
2006	8,633,625	2,722,238	921,457	399,188	1,519,806	143,478	2,601,925	1,328,730	4,092,706	1,148,830
2007	8,313,505	2,551,176	867,787	382,874	1,431,285	138,158	2,852,188	1,279,463	3,854,325	1,081,916
2008	7,426,060	2,031,601	688,671	338,976	1,135,859	123,410	2,881,450	1,142,884	3,058,771	858,602
2009	7,702,592	2,185,152	748,990	353,387	1,235,348	128,006	3,325,240	1,185,442	3,326,684	933,806
2010	8,222,880	2,592,946	853,876	378,562	1,408,341	136,652	3,893,714	1,265,515	3,792,541	1,064,573
2011	8,034,503	2,504,505	814,229	369,989	1,342,950	133,521	4,153,676	1,236,524	3,616,448	1,015,143
2012	8,546,464	2,847,541	902,241	395,155	1,488,111	142,029	4,811,229	1,315,316	4,007,355	1,124,871
2013	9,509,144	3,563,507	1,111,546	442,470	1,833,328	158,028	5,732,001	1,463,474	4,936,995	1,385,823
2014	10,168,441	4,004,323	1,238,679	475,565	2,043,016	168,984	6,637,265	1,564,941	5,501,666	1,544,327
2015	10,319,519	4,177,781	1,266,178	482,844	2,088,371	171,495	6,733,306	1,588,192	5,623,803	1,578,611
2016	10,841,075	4,506,922	1,359,237	508,257	2,241,858	180,162	7,082,588	1,668,460	6,037,129	1,694,633
2017	10,179,421	4,136,656	1,244,849	476,306	2,053,193	169,167	6,643,053	1,566,631	5,529,071	1,552,020
2018	10,747,945	4,568,472	1,345,600	504,307	2,219,366	178,615	7,055,231	1,654,127	5,976,561	1,677,631
2019	11,175,240	4,697,840	1,432,846	523,043	2,363,266	185,716	7,260,819	1,719,889	6,364,070	1,786,406
2020	10,338,342	4,212,516	1,264,668	483,693	2,085,880	171,808	6,756,424	1,591,089	5,617,095	1,576,728
2021	10,273,864	4,185,372	1,261,982	480,614	2,081,451	170,736	6,717,232	1,581,166	5,605,167	1,573,380
2022	9,910,213	3,869,259	1,196,283	462,255	1,973,090	164,693	6,478,404	1,525,199	5,313,361	1,491,470
2023	10,098,586	4,008,089	1,220,548	471,250	2,013,112	167,823	6,603,561	1,554,190	5,421,136	1,521,722
2024	9,575,130	3,588,553	1,118,132	444,318	1,844,191	159,124	6,239,243	1,473,629	4,966,248	1,394,034
2025	10,321,280	4,171,895	1,279,177	482,879	2,109,812	171,524	6,747,233	1,588,463	5,681,540	1,594,818
2026	10,568,109	4,379,310	1,307,698	494,028	2,156,853	175,626	6,894,690	1,626,450	5,808,218	1,630,377
2027	10,397,682	4,181,175	1,284,444	485,902	2,118,499	172,794	6,786,110	1,600,221	5,704,935	1,601,385
2028	10,370,630	4,233,755	1,276,603	484,965	2,105,565	172,344	6,771,506	1,596,058	5,670,105	1,591,608
2029	10,267,210	4,102,406	1,259,278	479,496	2,076,990	170,626	6,702,847	1,580,141	5,593,155	1,570,008
2030	10,290,060	4,180,248	1,263,642	480,957	2,084,189	171,005	6,717,704	1,583,658	5,612,540	1,575,450
2031	10,138,616	4,063,651	1,235,259	472,423	2,037,375	168,489	6,640,777	1,560,351	5,486,473	1,540,063
2032	10,278,514	4,150,980	1,262,570	478,081	2,082,421	170,813	6,692,384	1,581,881	5,607,780	1,574,114
2033	11,181,416	4,808,988	1,423,808	523,411	2,348,359	185,818	7,316,012	1,720,839	6,323,927	1,775,137
2034	10,459,279	4,281,087	1,300,499	486,846	2,144,980	173,818	6,816,441	1,609,701	5,776,244	1,621,402
2035	11,382,597	4,203,288	1,430,235	528,011	2,358,959	189,162	7,367,653	1,751,801	6,352,473	1,783,150
Total	364,480,049	124,906,991	44,029,621	16,588,484	75,074,938	6,055,875	206,506,311	55,825,376	177,609,495	50,125,779

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	192,606
1967	0	0	0	0	0	0	0	0	0	236,998
1968	0	0	0	30,401	0	0	0	0	0	1,117,912
1969	0	0	0	30,627	0	0	0	0	0	773,646
1970	0	0	0	39,430	0	0	0	0	0	1,103,799
1971	0	0	0	34,871	0	0	0	0	0	1,513,434
1972	0	848,011	0	947,265	0	0	0	0	0	3,297,200
1973	0	1,083,328	0	1,687,125	0	0	0	0	0	3,174,990
1974	0	1,872,297	0	2,374,280	0	0	0	0	0	3,927,058
1975	0	3,887,152	0	4,501,969	0	0	0	0	0	6,060,461
1976	0	5,485,263	0	6,491,874	0	0	0	0	0	8,480,766
1977	0	(796,686)	0	(222,757)	0	0	0	0	0	1,164,427
1978	0	3,696,428	0	4,893,639	0	0	0	0	0	7,636,134
1979	0	4,021,960	0	5,859,525	0	0	0	0	0	9,873,933
1980	0	5,362,245	0	7,605,064	0	0	0	0	0	10,425,875
1981	0	10,862,932	0	13,626,585	0	0	0	0	0	17,576,025
1982	0	7,685,168	0	10,069,760	0	0	0	0	0	13,566,611
1983	0	(8,994,497)	0	(8,620,839)	0	0	0	0	0	(7,441,552)
1984	0	(7,633,741)	0	(6,721,621)	0	0	0	0	0	(4,008,601)
1985	0	(15,213,299)	0	(13,669,981)	0	0	0	0	0	(9,784,304)
1986	0	1,135,478	0	4,531,004	0	0	0	0	0	11,629,583
1987	0	(3,007,097)	0	117,200	0	0	0	0	0	6,747,304
1988	0	(3,407,929)	0	(378,102)	0	0	0	0	0	6,350,803
1989	0	9,488,536	0	15,062,252	0	0	0	0	0	24,661,695
1990	0	30,759,725	204,582	39,322,825	0	0	0	0	0	48,182,824
1991	0	184,870	22,623	1,625,204	0	0	0	0	0	2,462,221
1992	0	(9,471,028)	0	(8,195,129)	0	0	0	0	0	(5,500,561)
1993	0	(21,473,875)	0	(25,072,572)	0	0	0	0	0	(24,652,636)
1994	0	4,018,533	0	7,871,823	0	0	0	0	0	13,466,318
1995	0	(4,895,977)	0	(4,901,581)	0	0	0	0	0	(99,701)
1996	0	1,859,275	0	6,054,577	0	0	0	0	0	15,893,938
1997	0	2,428,729	(921)	6,336,979	0	0	0	0	0	14,932,641
1998	0	(14,440,371)	(67,583)	(23,642,827)	0	0	0	0	0	(23,707,573)
1999	0	(4,555,625)	(19,441)	(3,073,108)	0	0	0	0	0	4,260,719
2000	0	44,929,116	201,092	57,362,386	0	0	0	0	0	76,013,228
2001	121,689	41,949,505	570,928	65,065,425	0	0	0	0	0	82,055,387
2002	165,331	58,595,528	766,120	87,287,639	0	0	0	0	0	106,695,050
2003	206,108	47,919,222	558,180	75,172,075	0	0	0	0	0	94,185,895
2004	156,048	34,439,314	485,775	54,887,120	0	0	0	0	0	70,947,583
2005	263,159	53,074,433	712,667	76,045,215	0	0	0	0	0	94,301,257
2006	299,174	57,954,621	763,178	82,528,956	0	0	0	0	0	101,496,008
2007	649,901	54,117,036	699,288	78,218,902	0	0	0	0	0	96,414,771
2008	515,758	43,635,292	584,129	64,421,463	0	0	0	0	0	81,598,013
2009	560,932	47,925,983	618,614	70,230,176	0	0	0	0	0	87,035,337
2010	639,483	56,324,571	703,037	81,276,691	0	0	0	0	0	100,291,446
2011	609,791	54,753,628	682,169	79,267,076	0	0	0	0	0	97,389,449
2012	675,704	62,180,778	756,613	89,193,407	0	0	0	0	0	107,539,579
2013	832,456	78,173,574	905,864	110,048,210	0	0	0	0	0	131,568,945
2014	927,669	88,608,225	1,000,730	123,883,831	0	0	0	0	0	145,371,229
2015	948,263	92,601,542	1,034,076	128,613,981	0	0	0	0	0	151,231,641
2016	1,017,956	100,933,884	1,105,631	139,177,792	0	0	0	0	0	163,431,620
2017	932,290	93,731,846	1,022,559	129,237,062	0	0	0	0	0	151,828,107
2018	1,007,744	103,600,146	1,113,219	141,648,964	0	0	0	0	0	164,711,652
2019	1,073,084	110,006,012	1,148,706	149,736,937	0	0	0	0	0	174,550,111
2020	947,132	98,996,161	1,040,554	135,082,090	0	0	0	0	0	157,793,982
2021	945,121	99,247,534	1,034,058	135,157,677	0	0	0	0	0	157,630,172
2022	895,918	93,051,272	970,045	127,301,462	0	0	0	0	0	148,636,165
2023	914,090	95,571,169	999,163	130,564,439	0	0	0	0	0	152,711,797
2024	837,389	86,679,619	912,455	119,232,065	0	0	0	0	0	140,257,957
2025	957,999	99,860,903	1,033,711	136,001,234	0	0	0	0	0	157,834,309
2026	979,358	103,286,381	1,075,580	140,382,678	0	0	0	0	0	164,385,796
2027	961,943	100,189,315	1,037,479	136,521,884	0	0	0	0	0	159,233,492
2028	956,070	100,396,239	1,045,132	136,670,580	0	0	0	0	0	159,614,105
2029	943,095	98,259,312	1,020,140	134,024,704	0	0	0	0	0	156,371,877
2030	946,364	99,266,676	1,033,624	135,206,117	0	0	0	0	0	158,027,949
2031	925,107	96,799,066	1,009,581	132,077,231	0	0	0	0	0	153,793,038
2032	945,561	98,912,902	1,028,860	134,766,861	0	0	0	0	0	157,527,053
2033	1,066,315	112,885,157	1,167,471	152,726,658	0	0	0	0	0	176,904,984
2034	973,967	101,941,024	1,056,452	138,641,740	0	0	0	0	0	161,548,329
2035	1,071,128	106,819,153	1,074,302	146,311,912	0	0	0	0	0	169,765,193
Total	26,869,097	2,918,405,944	32,110,442	4,098,588,402	0	0	0	0	0	4,974,518,923

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	21,132	76,669	0	0	0
1963	0	0	0	151,051	190,362	448,046	789,459	0	0	0
1964	0	0	0	185,691	277,596	621,810	1,085,097	6,059	20,500	26,559
1965	0	0	0	264,383	404,537	1,158,837	1,827,757	11,426	31,741	43,167
1966	18,080	0	18,080	292,408	421,959	1,413,838	2,128,205	20,183	49,661	69,843
1967	41,609	0	41,609	371,390	498,702	1,687,073	2,557,165	37,976	84,159	122,136
1968	128,726	0	128,726	420,116	603,776	1,986,292	3,010,184	63,524	133,083	196,607
1969	254,848	0	254,848	478,968	539,661	2,084,406	3,103,035	118,159	235,273	353,432
1970	277,683	0	277,683	494,124	532,900	2,203,950	3,230,974	130,874	259,885	390,759
1971	227,611	0	227,611	455,348	552,449	2,171,086	3,178,883	131,690	262,452	394,142
1972	225,116	0	225,116	496,296	678,856	2,321,613	3,496,765	137,449	274,499	411,948
1973	221,231	31,399	252,630	460,814	549,729	2,339,814	3,350,357	134,243	269,331	403,574
1974	240,640	32,973	273,613	484,146	564,931	2,507,555	3,556,632	135,250	271,888	407,138
1975	237,607	36,329	273,936	532,507	606,069	2,411,123	3,549,699	151,574	302,777	454,351
1976	271,444	40,877	312,321	622,805	735,150	2,501,707	3,859,662	260,651	505,757	766,408
1977	293,781	45,141	338,922	586,047	713,898	2,477,605	3,777,550	270,375	527,183	797,558
1978	274,027	49,226	323,253	640,168	692,930	2,787,198	4,120,296	277,011	542,731	819,743
1979	289,639	53,391	343,030	703,674	736,703	2,814,796	4,255,173	274,791	541,913	816,704
1980	311,013	67,811	378,824	820,222	866,718	3,029,427	4,716,367	301,540	595,555	897,095
1981	347,959	87,486	435,445	782,606	879,708	2,918,817	4,581,131	320,683	644,756	965,439
1982	438,523	107,012	545,535	820,900	850,834	3,263,337	4,935,071	321,734	641,252	962,986
1983	354,997	151,387	506,384	831,623	900,714	3,796,679	5,529,016	350,899	691,673	1,042,572
1984	467,597	224,431	692,028	1,119,728	1,097,836	5,739,049	7,956,613	383,307	754,055	1,137,362
1985	736,437	364,602	1,101,039	1,565,561	1,789,730	6,552,806	9,908,097	426,281	835,495	1,261,776
1986	1,085,378	693,036	1,778,414	1,391,884	1,529,094	6,864,494	9,785,472	417,234	821,187	1,238,421
1987	1,774,876	1,560,480	3,335,356	1,880,816	2,012,240	6,676,624	10,569,680	416,980	870,826	1,287,805
1988	2,232,956	2,335,557	4,568,513	1,880,817	2,210,888	6,370,122	10,461,827	451,848	1,037,190	1,489,038
1989	2,398,756	3,328,748	5,727,504	1,794,271	1,872,400	5,917,998	9,584,669	445,926	1,221,351	1,667,278
1990	2,747,669	3,435,293	6,182,962	2,211,153	2,262,288	6,669,735	11,143,176	519,316	1,293,085	1,812,401
1991	2,749,005	3,684,317	6,433,322	1,385,483	1,621,574	4,529,255	7,536,312	523,138	1,535,138	2,058,277
1992	2,555,921	3,530,721	6,086,642	1,697,954	2,003,748	5,387,268	9,088,970	582,791	1,550,085	2,132,876
1993	2,594,460	3,506,266	6,100,726	2,498,559	2,011,659	6,513,317	11,023,535	641,692	1,734,869	2,376,561
1994	2,719,772	3,539,586	6,259,358	2,521,777	2,642,856	7,315,864	12,480,497	795,279	2,537,500	3,332,779
1995	2,650,861	3,511,980	6,162,841	2,648,222	2,289,492	5,895,186	10,832,900	1,010,374	5,055,012	6,065,385
1996	2,696,659	3,880,647	6,577,306	2,168,275	2,117,255	6,598,523	10,884,053	1,880,658	13,821,514	15,702,172
1997	2,643,486	3,633,228	6,276,714	2,266,773	2,007,815	6,553,036	10,827,624	2,365,016	21,889,261	24,254,277
1998	2,549,036	3,492,339	6,041,375	1,968,072	2,082,230	6,346,060	10,396,362	3,061,488	26,634,300	29,695,788
1999	2,717,823	3,928,002	6,645,825	2,684,694	2,584,466	8,721,755	13,990,915	3,108,871	27,298,641	30,407,512
2000	3,205,990	4,445,631	7,651,621	5,805,933	3,067,295	8,186,958	17,060,186	3,408,177	30,263,707	33,671,884
2001	3,115,362	4,338,705	7,454,067	5,216,164	3,165,128	8,918,727	17,300,019	5,014,673	30,346,405	35,361,078
2002	3,161,804	4,411,594	7,573,398	5,279,555	3,219,529	9,089,650	17,588,734	4,980,600	30,908,873	35,889,472
2003	3,141,078	4,384,605	7,525,683	5,164,070	3,157,631	8,797,748	17,119,449	4,905,705	30,773,670	35,679,375
2004	3,098,609	4,320,581	7,419,190	4,957,482	3,002,142	8,395,215	16,354,839	4,708,274	30,385,560	35,093,834
2005	3,139,953	4,364,583	7,504,536	5,461,130	3,134,103	8,507,057	17,102,290	4,877,175	30,692,304	35,569,478
2006	3,149,988	4,368,079	7,518,067	5,498,510	3,157,508	8,562,752	17,218,770	4,899,287	30,731,306	35,630,592
2007	3,149,641	4,359,848	7,509,489	5,444,276	3,123,945	8,482,846	17,051,067	4,856,227	30,653,228	35,509,454
2008	3,154,613	4,358,801	7,513,414	5,487,940	3,150,870	8,546,959	17,185,769	4,858,107	30,656,818	35,514,924
2009	3,168,715	4,367,552	7,536,267	5,472,819	3,141,484	8,524,618	17,138,921	4,874,840	30,687,448	35,562,287
2010	3,186,087	4,379,249	7,565,336	5,581,327	3,208,623	8,684,459	17,474,409	4,946,160	30,816,737	35,762,896
2011	3,194,493	4,383,007	7,577,500	5,543,334	3,184,090	8,628,149	17,355,573	4,925,732	30,784,453	35,710,184
2012	3,210,484	4,392,916	7,603,400	5,555,269	3,191,424	8,645,617	17,392,310	4,956,312	30,840,236	35,796,547
2013	3,155,329	4,324,783	7,480,112	5,136,402	2,926,627	7,901,838	15,964,867	4,711,677	30,396,113	35,107,789
2014	3,138,583	4,298,653	7,437,236	4,859,587	2,732,592	7,430,048	15,022,227	4,573,230	30,136,260	34,709,490
2015	3,141,640	4,288,474	7,430,114	4,770,934	2,635,685	7,041,792	14,448,411	4,539,854	30,074,011	34,613,865
2016	3,134,582	4,287,633	7,422,215	4,782,004	2,636,890	6,944,161	14,363,055	4,550,787	30,091,546	34,642,333
2017	3,114,139	4,279,589	7,393,728	4,610,225	2,551,710	6,698,834	13,860,769	4,476,524	29,954,546	34,431,070
2018	3,059,364	4,292,662	7,352,026	4,501,407	2,529,719	6,621,645	13,652,771	4,505,695	30,006,626	34,512,320
2019	3,039,352	4,302,502	7,341,854	4,471,156	2,550,961	6,654,843	13,676,960	4,562,349	30,107,530	34,669,879
2020	3,021,883	4,279,519	7,301,402	4,306,305	2,459,275	6,433,140	13,198,720	4,454,532	29,909,894	34,364,425
2021	3,018,497	4,276,427	7,294,924	4,277,462	2,443,387	6,395,814	13,116,663	4,439,294	29,880,580	34,319,874
2022	3,002,946	4,264,870	7,267,816	4,208,150	2,400,208	6,290,965	12,899,323	4,380,578	29,773,662	34,154,240
2023	3,006,104	4,236,367	7,242,471	4,252,751	2,428,379	6,356,315	13,037,445	4,408,028	29,821,494	34,229,523
2024	2,948,995	4,232,396	7,181,391	4,227,227	2,412,493	6,317,973	12,957,693	4,417,495	29,838,687	34,256,182
2025	3,004,352	4,239,845	7,244,197	4,230,010	2,414,692	6,322,441	12,967,143	4,422,338	29,846,541	34,268,879
2026	3,003,103	4,238,460	7,241,563	4,332,296	2,477,862	6,472,660	13,282,818	4,361,076	29,730,894	34,091,970
2027	2,992,652	4,227,393	7,220,045	4,259,990	2,433,293	6,365,151	13,058,434	4,317,755	29,648,139	33,965,893
2028	2,993,005	4,226,892	7,219,897	4,273,439	2,441,462	6,383,297	13,098,198	4,325,473	29,659,416	33,984,889
2029	2,982,997	4,216,600	7,199,597	4,231,590	2,415,885	6,321,473	12,968,948	4,297,561	29,604,561	33,902,122
2030	2,976,923	4,205,168	7,182,091	4,255,033	2,430,803	6,356,554	13,042,390	4,314,664	29,631,040	33,945,704
2031	2,957,479	4,181,105	7,138,584	4,185,795	2,388,057	6,254,377	12,828,229	4,273,611	29,543,661	33,817,272
2032	2,955,244	4,169,677	7,124,921	4,249,191	2,427,423	6,347,828	13,024,442	4,317,367	29,628,608	33,945,974
2033	2,950,909	4,145,124	7,096,033	4,332,211	2,479,533	6,471,493	13,283,237	4,404,616	29,789,374	34,193,989
2034	2,868,714	4,056,687	6,925,401	4,247,130	2,427,421	6,346,106	13,020,657	4,332,748	29,656,834	33,989,581
2035	2,729,084	3,908,264	6,637,348	4,227,795	2,416,450	6,319,170	12,963,415	4,311,641	29,616,681	33,928,322
Total	150,047,919	199,406,506	349,454,425	214,286,975	143,342,119	412,635,906	770,265,000	184,396,448	1,200,663,018	1,385,059,466

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								Total (19)
				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)	
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	267,827	0	0	0	0	294,105
1968	184,823	8,865	54,628	445,746	1,544,154	12,874	11,550	209,070	2,471,710
1969	180,429	7,514	87,621	525,451	2,391,612	11,486	10,550	357,689	3,572,352
1970	202,467	14,281	94,721	574,381	2,914,312	11,613	13,086	294,194	4,119,055
1971	198,780	15,239	95,743	606,288	3,822,679	16,561	14,384	449,346	5,219,020
1972	221,378	16,107	98,837	632,023	4,993,000	14,004	20,635	1,083,273	7,079,257
1973	203,999	12,178	97,599	639,660	4,925,914	14,255	11,685	409,892	6,315,182
1974	284,153	12,147	98,509	698,659	5,228,590	14,346	12,762	599,228	6,948,394
1975	351,426	13,092	106,753	716,020	6,350,726	15,358	14,445	730,277	8,298,097
1976	306,102	13,638	108,133	774,706	6,704,867	15,727	16,113	565,985	8,505,271
1977	268,063	10,748	112,604	798,278	6,880,068	17,171	13,899	512,813	8,613,644
1978	356,996	9,619	115,573	891,365	8,333,912	17,554	17,937	506,577	10,249,533
1979	387,183	13,485	114,305	896,617	9,459,848	18,829	24,868	955,623	11,870,758
1980	408,395	11,835	126,003	889,318	10,018,223	19,373	24,234	740,006	12,237,387
1981	471,886	29,676	134,223	1,079,755	11,464,320	23,547	22,910	911,465	14,137,782
1982	466,395	12,826	135,111	1,005,105	12,297,704	21,560	22,374	748,978	14,710,053
1983	639,593	14,420	149,256	1,027,700	15,506,769	38,568	29,131	428,418	17,833,855
1984	912,295	14,834	164,560	2,063,626	23,634,237	53,027	59,615	786,292	27,688,486
1985	1,100,804	87,397	184,961	2,351,047	27,942,112	68,080	70,144	2,172,342	33,976,887
1986	1,265,002	33,851	180,501	2,365,616	30,521,732	79,362	76,003	2,185,990	36,708,057
1987	1,123,540	50,646	179,928	2,805,229	29,308,556	76,604	74,249	2,245,082	35,863,834
1988	1,109,110	61,441	193,791	2,750,873	29,221,904	72,749	60,123	2,202,832	35,672,823
1989	1,144,591	49,123	187,970	2,436,095	29,284,906	65,613	68,587	2,446,327	35,683,212
1990	866,662	34,285	221,449	2,540,302	27,401,177	49,614	49,015	1,873,426	33,035,930
1991	584,671	23,190	220,343	2,055,766	17,600,569	26,475	26,784	1,233,991	21,771,789
1992	954,248	39,549	241,524	2,367,832	25,898,690	54,758	50,838	1,911,131	31,518,570
1993	1,166,538	53,553	265,031	2,800,126	31,412,859	71,404	69,521	2,644,719	38,483,751
1994	1,021,688	43,683	306,435	2,809,587	29,289,146	58,948	57,289	2,120,781	35,707,557
1995	1,518,316	46,537	304,376	3,500,325	36,412,225	87,332	80,112	2,774,759	44,723,982
1996	1,323,325	47,273	389,286	3,292,036	35,863,226	82,646	72,234	4,221,396	45,291,422
1997	1,390,138	25,326	276,769	3,108,534	32,571,507	34,964	68,619	1,674,727	39,150,584
1998	1,240,055	34,589	381,975	2,748,377	29,405,570	40,346	60,271	1,817,342	35,728,525
1999	1,253,858	57,075	355,010	3,220,762	32,183,234	75,297	66,340	4,276,865	41,488,441
2000	1,474,647	82,938	385,608	3,434,952	36,035,049	81,011	79,518	3,959,895	45,533,618
2001	1,407,350	63,594	368,798	3,482,788	33,676,695	86,659	83,771	2,963,562	42,133,217
2002	1,405,389	63,632	373,467	3,524,109	33,773,220	87,831	85,115	2,965,442	42,278,205
2003	1,390,714	62,805	373,702	3,437,327	33,451,206	86,733	83,963	2,932,781	41,819,231
2004	1,296,053	57,562	366,674	3,202,727	31,404,301	79,948	77,319	2,725,219	39,209,803
2005	1,343,890	60,254	366,684	3,328,471	32,510,464	83,548	79,995	2,831,473	40,604,779
2006	1,358,360	61,070	366,603	3,363,067	32,777,794	84,651	81,367	2,863,690	40,956,602
2007	1,331,975	59,586	366,640	3,299,055	32,264,792	82,673	79,101	2,805,089	40,288,911
2008	1,361,224	61,231	366,664	3,365,387	32,740,221	84,862	82,381	2,870,019	40,931,989
2009	1,334,820	59,746	366,689	3,307,955	32,349,181	82,882	79,141	2,811,378	40,391,792
2010	1,398,183	63,307	366,624	3,455,149	33,476,419	87,635	85,428	2,952,100	41,884,845
2011	1,365,342	61,450	367,721	3,378,470	32,910,937	85,127	82,026	2,878,772	41,129,845
2012	1,360,089	61,154	367,741	3,371,653	32,912,158	84,732	80,754	2,867,096	41,105,377
2013	1,315,068	58,622	367,876	3,247,292	31,765,345	81,350	79,055	2,767,063	39,681,671
2014	1,219,237	53,231	365,358	3,020,636	30,008,397	74,157	69,956	2,554,176	37,365,148
2015	1,233,062	54,007	362,044	2,974,332	30,169,657	75,193	72,005	2,584,876	37,525,176
2016	1,280,032	56,650	355,978	3,020,204	30,998,068	78,716	76,734	2,689,193	38,555,575
2017	1,223,134	53,450	341,783	2,753,721	29,934,797	74,450	71,488	2,562,840	37,015,663
2018	1,228,410	53,744	319,230	2,654,558	30,131,381	66,325	71,186	2,574,475	37,099,309
2019	1,281,448	56,727	310,660	2,718,202	31,077,964	69,797	76,418	2,692,287	38,283,503
2020	1,226,577	53,643	308,814	2,553,273	30,013,348	65,438	71,693	2,570,473	36,863,259
2021	1,215,806	53,039	307,639	2,505,762	29,812,043	64,492	70,704	2,546,594	36,576,079
2022	1,186,785	51,404	307,209	2,426,625	29,262,955	62,239	68,085	2,482,060	35,847,362
2023	1,215,737	53,035	306,595	2,490,044	29,780,238	64,390	70,948	2,546,442	36,527,429
2024	1,173,361	50,651	306,169	2,387,030	29,020,757	61,190	66,777	2,452,304	35,518,239
2025	1,186,491	51,390	305,581	2,420,179	29,323,102	62,151	67,532	2,481,470	35,897,896
2026	1,262,037	55,636	305,352	2,590,757	30,608,410	67,776	75,495	2,649,189	37,614,652
2027	1,220,854	53,322	304,653	2,493,286	29,893,734	64,648	71,271	2,557,778	36,659,546
2028	1,227,283	53,681	302,311	2,505,401	30,001,673	65,103	71,955	2,572,003	36,799,410
2029	1,210,113	52,718	301,890	2,462,580	29,693,081	63,760	70,283	2,533,935	36,388,360
2030	1,224,458	53,526	301,552	2,492,007	29,937,021	64,771	71,797	2,565,814	36,710,946
2031	1,189,886	51,579	300,148	2,394,397	29,341,190	61,777	68,210	2,488,953	35,896,140
2032	1,220,658	53,309	300,120	2,467,282	29,879,189	64,100	71,332	2,557,287	36,613,277
2033	1,250,908	55,013	299,595	2,540,025	30,545,052	66,244	73,317	2,624,552	37,454,706
2034	1,221,095	53,335	299,095	2,458,920	29,920,522	63,861	71,108	2,558,295	36,646,231
2035	1,244,218	54,634	298,429	2,511,558	30,423,926	65,358	72,712	2,609,603	37,280,438
Total	69,191,603	2,972,697	17,912,312	159,935,286	1,702,612,635	3,925,623	4,000,247	143,739,014	2,104,289,417

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	33,351	0	0	0	0	0	0	0	51,776	0
1964	62,921	27,471	14,439	4,374	36,574	1,144	28,462	8,212	82,882	34,412
1965	118,701	53,051	25,116	7,200	40,804	2,084	50,359	15,235	135,181	35,374
1966	215,957	101,347	44,766	12,489	73,212	3,756	90,472	27,701	232,692	61,515
1967	417,815	210,983	86,188	23,491	141,524	7,290	175,317	54,067	433,699	115,667
1968	736,546	478,475	152,801	41,540	251,384	12,880	310,927	95,536	782,747	209,082
1969	1,059,784	724,786	225,474	61,272	371,235	18,707	458,452	138,165	1,206,740	321,996
1970	1,378,038	904,783	315,498	89,767	519,705	25,249	632,481	184,974	1,779,533	467,925
1971	1,705,583	1,088,696	432,863	128,455	713,270	31,859	856,465	231,446	2,541,067	659,907
1972	2,022,475	1,307,474	561,991	181,315	926,230	42,428	1,110,400	274,779	3,408,104	865,668
1973	2,112,704	1,323,448	696,314	183,826	1,137,733	43,507	1,173,249	287,500	3,991,385	947,287
1974	2,176,247	1,382,828	711,826	193,399	1,164,587	45,237	1,205,021	292,258	4,018,423	991,250
1975	2,352,809	1,450,702	752,738	206,159	1,232,392	48,516	1,271,599	304,470	4,179,073	1,091,737
1976	2,705,852	1,445,982	799,286	215,206	1,308,074	51,489	1,313,989	313,876	4,319,632	1,145,705
1977	2,648,527	1,514,962	695,107	226,156	1,145,763	47,376	1,385,500	329,558	4,573,911	1,209,859
1978	2,966,100	1,599,637	876,096	231,164	1,421,280	47,145	1,385,188	321,875	4,480,270	1,212,914
1979	3,519,454	1,634,118	943,658	238,080	1,519,445	48,422	1,512,311	332,667	4,442,502	1,153,183
1980	4,065,814	1,715,680	1,032,976	259,527	1,680,571	53,376	1,631,289	360,657	4,855,789	1,270,123
1981	4,394,711	1,969,226	1,103,845	271,311	1,798,030	77,834	1,751,206	392,075	5,244,401	1,358,378
1982	3,957,372	2,060,757	1,155,937	280,443	1,884,304	55,989	1,947,176	407,097	5,431,089	1,565,878
1983	5,146,749	2,322,821	1,745,736	333,214	2,828,178	69,411	2,020,711	494,902	6,041,200	1,557,364
1984	7,180,767	3,364,449	2,827,548	445,476	4,554,213	75,804	2,251,812	553,545	7,069,806	2,332,585
1985	8,921,346	3,748,697	3,623,681	540,529	5,828,959	79,264	2,361,820	732,883	7,760,777	2,379,145
1986	8,793,109	4,316,130	4,048,937	577,618	6,516,741	102,431	2,461,810	1,000,298	7,878,033	3,048,506
1987	8,809,198	4,157,448	3,903,754	605,128	6,364,174	211,842	2,502,513	1,026,638	9,245,114	3,034,918
1988	8,283,834	4,219,760	3,902,192	616,147	6,427,340	124,700	2,556,554	780,062	9,525,796	2,829,783
1989	8,660,719	4,099,554	3,546,296	586,744	5,897,313	170,603	2,503,554	1,442,870	8,964,820	2,931,185
1990	9,948,046	4,539,872	4,219,043	620,546	6,957,875	289,379	2,698,850	1,640,024	9,815,628	3,678,911
1991	6,448,677	3,508,838	2,699,428	560,535	4,451,489	174,892	3,405,521	1,294,864	8,673,689	2,963,700
1992	8,549,697	4,467,595	2,771,915	463,491	4,570,939	121,375	4,209,974	1,129,868	8,322,111	2,907,352
1993	8,933,145	4,098,015	2,966,748	465,459	4,892,327	157,789	4,084,090	1,347,821	9,182,756	3,228,021
1994	11,117,439	4,710,312	3,035,505	551,968	5,005,545	225,803	5,130,766	1,698,925	10,179,768	4,062,986
1995	10,720,716	4,968,190	3,808,919	507,307	6,281,400	155,608	4,219,410	1,527,591	9,428,362	3,706,449
1996	10,871,885	5,061,917	6,474,303	507,968	10,677,624	148,351	4,033,969	1,824,537	9,820,986	3,721,773
1997	11,339,484	4,923,094	6,306,575	579,507	7,364,226	144,883	4,589,807	1,869,679	11,268,437	4,039,065
1998	9,902,347	4,579,319	5,378,668	550,446	5,878,944	146,932	5,668,305	1,480,524	11,189,208	3,340,680
1999	11,997,101	5,262,219	4,935,520	657,600	6,755,676	149,710	5,979,237	1,978,136	13,081,174	4,503,259
2000	14,449,255	9,488,553	5,341,453	791,874	7,866,777	325,181	6,711,228	3,110,739	14,418,944	4,367,368
2001	19,997,454	13,358,317	3,634,261	1,157,172	6,143,293	340,080	13,868,977	3,091,409	20,465,364	5,269,504
2002	20,894,527	13,950,127	3,797,467	1,197,151	6,262,485	354,869	14,427,318	3,229,783	20,155,364	5,466,828
2003	20,364,473	12,684,704	3,722,248	1,162,950	6,138,416	347,564	14,094,901	3,148,267	19,484,931	5,307,745
2004	18,160,094	12,269,530	3,317,639	1,066,012	5,471,081	310,793	12,704,819	2,808,711	17,785,816	4,818,973
2005	19,824,442	12,626,402	3,638,406	1,175,907	6,000,150	338,441	8,450,994	3,064,814	19,634,968	5,292,341
2006	19,983,107	13,113,550	3,647,302	1,149,988	6,014,809	341,049	9,079,508	3,089,148	19,195,937	5,220,599
2007	19,567,088	13,161,039	3,588,032	1,144,983	5,917,058	334,142	9,511,064	3,025,139	19,159,006	5,185,874
2008	19,550,349	13,289,400	3,574,918	1,136,909	5,895,424	333,868	10,082,933	3,022,574	18,996,591	5,151,496
2009	19,754,564	13,392,894	3,626,897	1,154,835	5,981,162	337,266	10,742,629	3,054,014	19,327,311	5,233,585
2010	20,202,227	13,743,786	3,712,925	1,171,271	6,123,049	344,695	11,519,286	3,122,881	19,638,049	5,328,487
2011	19,961,532	13,624,966	3,669,173	1,166,340	6,050,890	340,731	11,997,733	3,085,927	19,530,223	5,289,116
2012	20,423,714	13,925,643	3,744,091	1,184,923	6,174,451	348,416	12,865,249	3,157,067	19,804,375	5,372,378
2013	18,354,625	12,442,933	3,352,911	1,072,366	5,515,875	314,608	12,234,887	2,843,824	17,853,484	4,843,587
2014	17,367,893	11,640,564	3,164,717	1,041,993	5,219,484	297,591	12,189,365	2,687,699	17,343,802	4,669,520
2015	16,971,929	11,410,665	3,067,531	1,001,327	5,059,181	290,998	11,942,537	2,627,740	16,613,793	4,496,796
2016	17,247,970	11,582,617	3,130,834	1,037,804	5,163,602	295,520	12,148,045	2,671,566	17,220,733	4,632,229
2017	16,300,979	10,986,610	2,946,321	975,581	4,859,277	279,610	11,555,355	2,528,443	16,169,610	4,362,544
2018	16,619,274	11,051,534	2,996,921	992,722	4,942,744	284,640	11,833,689	2,579,284	16,395,842	4,424,487
2019	16,741,364	10,807,263	3,023,278	1,003,586	4,986,231	286,200	11,858,755	2,598,365	16,569,896	4,462,333
2020	15,606,624	10,009,596	2,756,932	922,477	4,546,937	266,085	11,146,001	2,418,413	15,014,259	4,061,921
2021	15,223,248	9,582,689	2,626,875	868,414	4,332,434	258,543	10,833,149	2,355,435	14,022,120	3,823,658
2022	14,733,165	9,061,864	2,519,636	846,706	4,155,572	250,149	10,473,989	2,279,448	13,546,866	3,689,557
2023	14,925,000	9,249,952	2,546,645	865,968	4,200,128	253,156	10,590,212	2,308,480	13,782,422	3,739,539
2024	14,385,817	8,786,822	2,425,232	820,507	3,999,867	244,189	10,213,447	2,225,507	12,983,154	3,541,996
2025	14,956,394	9,177,874	2,544,715	850,042	4,196,940	253,634	10,592,819	2,313,272	13,523,292	3,691,469
2026	15,191,306	9,421,422	2,574,950	872,212	4,246,815	257,508	10,719,620	2,349,410	13,815,585	3,753,968
2027	15,007,314	9,070,167	2,529,251	843,917	4,171,435	254,425	10,593,887	2,321,116	13,338,432	3,648,316
2028	14,972,490	9,320,757	2,510,624	833,147	4,140,709	253,839	10,571,517	2,315,848	13,122,291	3,601,523
2029	14,851,001	8,958,984	2,508,378	850,997	4,137,016	251,793	10,490,510	2,297,258	13,457,860	3,658,524
2030	14,854,375	8,973,523	2,509,195	852,640	4,138,365	251,839	10,494,025	2,298,046	13,479,563	3,662,697
2031	14,612,360	8,565,399	2,433,736	805,245	4,013,894	247,777	10,366,542	2,261,357	12,661,671	3,485,471
2032	14,759,916	8,810,681	2,489,416	843,260	4,105,746	250,222	10,426,723	2,284,447	13,357,306	3,632,286
2033	15,578,691	9,198,417	2,619,794	867,490	4,320,780	263,780	11,010,193	2,411,921	13,697,154	3,753,450
2034	14,754,383	8,646,658	2,475,481	822,768	4,082,759	250,080	10,468,249	2,287,290	13,001,110	3,562,762
2035	15,601,928	8,572,733	2,621,954	897,865	4,324,363	264,072	10,988,509	2,419,764	14,178,759	3,835,914
Total	807,025,892	487,301,271	188,211,826	47,474,206	301,518,279	13,730,418	478,767,230	121,889,721	796,384,444	227,322,383

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	3,219	79,888
1963	0	691,432	0	776,559	0	0	0	0	55,621	1,621,639
1964	21,378	1,261,584	9,386	1,593,239	0	0	0	0	83,871	2,791,493
1965	21,885	2,182,389	17,781	2,705,160	0	0	405	405	128,944	4,785,098
1966	37,995	3,903,334	33,453	4,838,689	0	0	565	565	148,285	7,353,158
1967	71,340	7,699,870	68,210	9,505,461	0	0	562	562	204,629	12,725,667
1968	129,011	15,329,317	142,909	18,673,155	0	0	565	565	279,263	24,760,210
1969	198,912	23,170,450	215,370	28,171,343	0	0	3,194	3,194	349,208	35,807,412
1970	289,852	30,640,203	273,810	37,501,818	0	0	15,133	15,133	386,284	45,921,706
1971	409,633	40,006,076	342,676	49,147,996	0	0	16,014	16,014	375,846	58,559,512
1972	537,542	53,300,801	422,586	64,961,793	0	0	17,386	17,386	401,360	76,593,625
1973	588,337	57,633,921	435,938	70,555,149	0	0	17,348	17,348	375,839	81,270,079
1974	611,812	62,138,765	455,861	75,387,514	0	0	17,491	17,491	398,816	86,989,598
1975	645,016	67,119,845	478,703	81,133,759	0	0	18,419	18,419	408,036	94,136,297
1976	668,719	68,848,783	475,889	83,612,482	0	0	17,490	17,490	430,626	97,504,260
1977	696,926	66,598,462	507,369	81,579,476	0	0	18,246	18,246	423,367	95,548,763
1978	709,455	73,299,536	523,487	89,074,147	0	0	17,394	17,394	426,614	105,030,980
1979	713,284	73,031,987	526,722	89,615,833	0	0	20,592	20,592	446,652	107,368,742
1980	778,402	80,293,064	571,563	98,568,831	0	0	17,774	17,774	507,472	117,323,750
1981	806,465	91,630,302	636,761	111,434,545	0	0	21,207	21,207	517,022	132,092,571
1982	853,833	93,514,282	670,741	113,784,898	0	0	28,436	28,436	505,226	135,472,205
1983	952,573	102,158,486	803,970	126,475,315	0	0	19,290	19,290	553,078	151,959,510
1984	1,073,095	137,878,874	869,353	170,477,327	0	0	21,128	21,128	561,792	208,534,736
1985	1,121,321	173,814,751	909,160	211,822,333	0	0	20,252	20,252	680,398	258,770,782
1986	1,150,189	193,614,894	937,704	234,446,400	0	0	20,153	20,153	620,136	284,597,053
1987	1,172,498	179,137,643	908,428	221,079,296	0	0	19,755	19,755	686,858	272,842,584
1988	1,208,693	190,617,005	905,263	231,997,129	0	0	17,914	17,914	708,447	284,915,691
1989	1,195,401	193,609,005	932,997	234,541,061	0	0	19,172	19,172	768,165	287,991,061
1990	1,298,121	239,914,892	1,487,158	287,108,345	0	0	18,162	18,162	822,381	340,123,357
1991	1,310,105	178,901,771	1,141,534	215,535,043	0	0	21,032	21,032	567,846	253,923,621
1992	1,303,845	195,105,073	1,025,744	234,948,979	0	0	18,027	18,027	804,777	284,598,841
1993	1,450,126	168,055,543	1,068,619	209,930,459	0	0	21,013	21,013	964,987	268,901,032
1994	1,489,791	209,375,170	1,009,696	257,593,674	0	0	19,663	19,663	978,538	316,372,066
1995	1,515,141	173,614,001	1,061,852	221,514,946	0	0	20,291	20,291	905,433	290,225,778
1996	1,521,217	179,004,340	1,103,321	234,772,191	0	0	25,392	25,392	944,637	314,197,173
1997	1,705,088	187,130,504	1,217,123	242,477,472	0	0	24,834	24,834	802,600	323,814,105
1998	1,814,436	169,976,232	1,245,745	221,151,786	0	0	18,295	18,295	841,054	303,873,185
1999	2,080,239	212,274,059	1,283,783	270,937,713	0	0	18,671	18,671	901,037	364,390,114
2000	2,081,892	288,888,027	1,696,034	359,537,325	0	0	21,817	21,817	(120,297)	463,356,154
2001	2,372,744	280,898,241	2,702,768	373,299,584	0	0	21,786	21,786	(118,264)	475,451,487
2002	2,165,601	287,788,751	2,835,899	382,526,170	0	0	21,801	21,801	(118,380)	485,759,400
2003	2,195,267	263,292,327	2,577,508	354,521,301	0	0	21,910	21,910	(118,429)	456,568,520
2004	2,178,723	249,749,970	2,462,984	333,105,145	0	0	21,910	21,910	(118,477)	431,086,244
2005	2,404,402	281,324,915	2,725,179	366,501,361	0	0	21,910	21,910	(118,523)	467,185,831
2006	2,379,063	281,962,376	2,749,227	367,925,663	0	0	21,910	21,910	(118,566)	469,153,038
2007	3,170,060	279,675,621	2,674,427	366,113,533	0	0	21,910	21,910	(118,566)	466,375,798
2008	3,148,018	281,818,866	2,695,674	368,697,020	0	0	21,910	21,910	(118,566)	469,746,460
2009	3,198,668	286,794,829	2,719,816	375,318,470	0	0	21,910	21,910	(118,566)	475,851,081
2010	3,254,710	295,254,739	2,792,118	386,208,223	0	0	21,910	21,910	(118,566)	488,799,053
2011	3,232,265	294,232,508	2,764,842	384,946,246	0	0	21,910	21,910	(118,566)	486,622,692
2012	3,281,499	301,857,218	2,830,084	394,969,108	0	0	21,910	21,910	(118,566)	496,770,086
2013	2,961,431	273,785,336	2,518,155	358,094,022	0	0	21,910	21,910	(104,886)	456,245,485
2014	2,860,686	260,265,985	2,350,512	341,099,811	0	0	21,910	21,910	(96,315)	435,559,507
2015	2,752,792	255,021,138	2,298,060	333,554,487	0	0	21,505	21,505	(86,746)	427,506,812
2016	2,838,226	260,890,919	2,335,784	341,195,849	0	0	21,345	21,345	(81,350)	436,119,022
2017	2,672,546	248,277,678	2,203,489	324,118,043	0	0	21,347	21,347	(68,640)	416,771,980
2018	2,709,121	251,249,705	2,228,845	328,308,808	0	0	21,345	21,345	(44,647)	420,901,932
2019	2,731,937	251,723,678	2,199,093	328,991,979	0	0	18,716	18,716	(24,308)	422,958,583
2020	2,485,512	231,863,589	2,033,703	303,132,049	0	0	6,777	6,777	(17,849)	394,848,783
2021	2,335,785	221,707,874	1,952,135	289,922,359	0	0	5,950	5,950	(16,649)	381,219,200
2022	2,255,559	210,092,798	1,851,607	275,756,916	0	0	4,564	4,564	(16,447)	365,913,774
2023	2,287,158	211,312,195	1,888,501	277,949,356	0	0	4,563	4,563	(16,233)	368,974,554
2024	2,165,022	200,762,206	1,794,189	264,347,955	0	0	4,562	4,562	(16,101)	354,249,921
2025	2,254,818	208,221,190	1,872,041	274,448,500	0	0	4,560	4,560	(15,638)	364,815,537
2026	2,294,492	214,443,065	1,925,420	281,865,773	0	0	4,559	4,559	(15,506)	374,085,829
2027	2,227,328	204,454,748	1,849,060	270,309,396	0	0	4,556	4,556	(15,237)	361,202,633
2028	2,197,419	211,382,152	1,912,822	277,135,138	0	0	4,555	4,555	(14,895)	368,227,192
2029	2,236,220	204,376,039	1,832,214	269,906,794	0	0	4,553	4,553	(14,425)	360,355,949
2030	2,238,900	205,398,446	1,839,685	270,991,299	0	0	4,551	4,551	(13,994)	361,862,987
2031	2,125,679	196,037,278	1,757,493	259,373,902	0	0	4,550	4,550	(13,034)	349,045,643
2032	2,219,923	204,491,245	1,825,940	269,497,111	0	0	4,548	4,548	(13,144)	360,197,129
2033	2,289,254	211,792,816	1,904,126	279,707,866	0	0	4,548	4,548	(12,883)	371,727,496
2034	2,173,813	200,215,572	1,792,423	264,533,348	0	0	4,547	4,547	(11,710)	355,108,055
2035	2,344,808	207,973,653	1,813,447	275,837,769	0	0	4,545	4,545	(10,360)	366,641,477
Total	122,873,017	12,815,754,339	104,925,969	16,513,178,995	0	0	1,100,335	1,100,335	17,685,035	21,141,032,673

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 in millions of acre-feet [AF] discounted to 2000 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 2001						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Project Water Entitlements during the Project Repayment Period	$3,567.43 b)	226.85 AF	$2,221.02 c)	226.85 AF	$5,788.45	226.85 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period	(1,322.53)		(413.91)		(1,736.44)	
Less, Delta Water Charges Paid and Project Water Entitlements, Prior to 2001	(1,410.97) d)	(155.23) AF	(925.45)	(155.23) AF	(2,336.42)	(155.23) AF
Total	$833.93	71.62 AF	$881.66	71.62 AF	$1,715.59	71.62 AF
Rate Applicable in 2001	$11.64	per acre-foot	$12.31	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 2001						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Project Water Entitlements during the Project Repayment Period	$3,556.85b)	226.85	$2,212,54 c)	226.85	$5,769.39	226.85
Less, Project Power Revenues to be Realized During the Project Repayment Period	(1,322.53)		(413.91)		(1,736.44)	
Less, Delta Water Charges Paid and Project Water Entitlements, Prior to 2001	(1,410.97) d)	(155.23) AF	(925.45)	(155.23) AF	(2,336.42)	(155.23) AF
Total	$823.35	71.62 AF	$873.18	71.62 AF	$1,696.53	71.62 AF
Rate Applicable in 2001	$11.50	per acre-foot	$12.19	per acre-foot	$23.69	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	30.73	16.21	46.94
Less, Oroville Power Revenues	-18.46	-5.78	-24.24
Subtotal	12.27	10.43	22.70
Delta Facilities (b	8.63	7.82	16.45
California Aqueduct, portion			
Reach 1	1.97	2.97	4.94
Reach 2A	1.18	0.55	1.73
Reach 2B	0.60	0.26	0.88
Reach 3	0.40	0.17	0.57
Subtotal	4.15	3.97	8.12
San Luis Facilities	5.92	3.59	9.51
Planning and preoperating costs through 1999	1.73	0.00	1.73
45,000 AF relinquished costs	0.15	0.12	0.27
Less, Capital Cost Credits	-0.79	0.00	-0.79
Less, Delta Water Charges paid prior to 2001	-20.42	-13.62	-34.04
Rate applicable in 2001	11.64	12.31	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	1,628,402	1,005,778	2,394,709	5,028,889	598,677	1,089,257	1,687,934
2001	400,004	960,010	1,360,014	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2002	408,986	971,028	1,380,014	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2003	417,968	982,046	1,400,014	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2004	426,950	992,825	1,419,775	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2005	435,933	994,022	1,429,955	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2006	443,717	995,220	1,438,937	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2007	451,502	996,417	1,447,919	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2008	459,286	997,615	1,456,901	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2009	467,071	998,813	1,465,884	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2010	474,855	1,000,010	1,474,865	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2011	482,640	1,001,208	1,483,848	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2012	490,424	1,002,406	1,492,830	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2013	497,011	1,003,603	1,500,614	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2014	505,993	1,004,801	1,510,794	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2015	522,161	1,005,998	1,528,159	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2016	537,131	1,005,998	1,543,129	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2017	552,101	1,005,998	1,558,099	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2018	567,072	1,005,998	1,573,070	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2019	582,042	1,005,998	1,588,040	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2020	596,413	1,005,998	1,602,411	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2021	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2022	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2023	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2024	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2025	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2026	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2027	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2028	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2029	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2030	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2031	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2032	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2033	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2034	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
2035	598,809	1,005,998	1,604,807	1,628,759	1,005,998	2,395,234	5,029,991	598,809	1,089,496	1,688,305
Total	21,295,876	43,088,043	64,383,919	72,506,325	51,160,730	128,231,395	251,898,450	27,427,806	50,521,985	77,949,791

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)	Municipal 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	70,943	0	2,864,072	21,579,442	95,788	136,498	2,837,730	28,862,529
2001	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2002	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2003	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2004	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2005	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2006	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2007	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2008	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2009	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2010	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2011	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2012	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2013	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2014	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2015	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2016	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2017	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2018	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2019	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2020	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2021	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2022	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2023	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2024	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2025	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2026	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2027	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2028	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2029	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2030	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2031	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2032	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2033	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2034	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
2035	1,278,336	71,058	0	2,864,700	21,584,174	95,809	136,528	2,838,352	28,868,957
Total	66,729,969	3,902,198	0	148,109,451	1,132,579,283	4,904,947	7,173,757	144,500,948	1,507,900,553

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	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2002	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2003	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2004	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2005	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2006	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2007	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2008	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2009	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2010	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2011	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2012	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2013	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2014	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2015	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2016	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2017	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2018	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2019	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2020	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2021	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2022	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2023	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2024	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2025	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2026	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2027	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2028	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2029	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2030	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2031	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2032	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2033	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2034	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2035	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
Total	160,758,978	100,906,860	27,713,822	6,952,461	45,539,413	2,754,384	83,669,109	24,405,278	125,404,712	35,007,158

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	98,603,935
2001	95,809	48,180,135	479,047	61,483,264	229,942	658,689	37,187	925,818	0	99,356,349
2002	95,809	48,180,135	479,047	61,483,264	229,942	658,689	38,608	927,239	0	99,377,770
2003	119,762	48,180,135	479,047	61,507,217	229,942	658,689	40,029	928,660	0	99,423,144
2004	143,714	48,180,135	479,047	61,531,169	229,942	658,689	41,451	930,082	0	99,468,279
2005	155,690	48,180,135	479,047	61,543,145	229,942	658,689	42,872	931,503	0	99,491,856
2006	167,666	48,180,135	479,047	61,555,121	229,942	658,689	44,530	933,161	0	99,514,472
2007	179,643	48,180,135	479,047	61,567,098	229,942	658,689	46,188	934,819	0	99,537,089
2008	414,376	48,180,135	479,047	61,801,831	229,942	658,689	47,846	936,477	0	99,782,462
2009	414,376	48,180,135	479,047	61,801,831	229,942	658,689	49,504	938,135	0	99,793,103
2010	414,376	48,180,135	479,047	61,801,831	229,942	658,689	51,162	939,793	0	99,803,742
2011	414,376	48,180,135	479,047	61,801,831	229,942	658,689	53,057	941,688	0	99,814,620
2012	414,376	48,180,135	479,047	61,801,831	229,942	658,689	54,952	943,583	0	99,825,497
2013	414,376	48,180,135	479,047	61,801,831	229,942	658,689	57,083	945,714	0	99,835,412
2014	414,376	48,180,135	479,047	61,801,831	229,942	658,689	59,215	947,846	0	99,847,724
2015	414,376	48,180,135	479,047	61,801,831	229,942	658,689	61,584	950,215	0	99,867,458
2016	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,884,796
2017	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,899,766
2018	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,914,737
2019	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,929,707
2020	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,944,078
2021	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2022	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2023	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2024	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2025	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2026	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2027	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2028	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2029	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2030	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2031	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2032	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2033	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2034	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
2035	414,376	48,180,135	479,047	61,801,831	229,942	658,689	63,952	952,583	0	99,946,474
Total	16,402,736	2,422,120,623	22,367,706	3,074,003,240	10,254,731	23,642,297	2,474,268	36,371,296	0	5,012,507,249

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	135,556	237,492	373,048	171,263	187,162	522,127	880,552	141,810	846,616	988,426
1998	130,346	228,366	358,712	164,682	179,971	502,065	846,718	136,361	814,087	950,448
1999	182,507	316,416	498,923	227,072	248,031	691,830	1,166,933	188,835	1,124,110	1,312,945
2000	391,377	597,828	989,205	571,037	467,339	1,303,756	2,342,132	358,219	2,237,677	2,595,896
2001	388,681	593,710	982,391	567,103	464,120	1,294,776	2,325,999	355,751	2,222,263	2,578,014
2002	384,858	587,871	972,729	561,526	459,555	1,282,042	2,303,123	352,252	2,200,407	2,552,659
2003	382,460	584,208	966,668	558,027	456,692	1,274,054	2,288,773	350,058	2,186,697	2,536,755
2004	387,268	591,551	978,819	565,042	462,433	1,290,069	2,317,544	354,458	2,214,184	2,568,642
2005	385,222	588,426	973,648	562,056	459,989	1,283,253	2,305,298	352,585	2,202,487	2,555,072
2006	378,844	578,683	957,527	552,750	452,373	1,262,006	2,267,129	346,747	2,166,019	2,512,766
2007	377,474	576,592	954,066	550,752	450,738	1,257,445	2,258,935	345,494	2,158,191	2,503,685
2008	382,688	584,555	967,243	558,358	456,963	1,274,811	2,290,132	350,266	2,187,997	2,538,263
2009	383,475	585,758	969,233	559,507	457,904	1,277,434	2,294,845	350,987	2,192,500	2,543,487
2010	384,110	586,728	970,838	560,434	458,662	1,279,549	2,298,645	351,568	2,196,129	2,547,697
2011	384,932	587,983	972,915	561,633	459,643	1,282,286	2,303,562	352,320	2,200,828	2,553,148
2012	385,645	589,073	974,718	562,674	460,495	1,284,663	2,307,832	352,973	2,204,907	2,557,880
2013	383,346	585,561	968,907	559,319	457,750	1,277,005	2,294,074	350,869	2,191,762	2,542,631
2014	398,489	608,692	1,007,181	581,414	475,832	1,327,449	2,384,695	364,728	2,278,341	2,643,069
2015	389,489	594,944	984,433	568,282	465,085	1,297,468	2,330,835	356,491	2,226,884	2,583,375
2016	388,263	593,071	981,334	566,493	463,620	1,293,382	2,323,495	355,368	2,219,872	2,575,240
2017	386,674	590,644	977,318	564,174	461,723	1,288,089	2,313,986	353,914	2,210,787	2,564,701
2018	387,155	591,379	978,534	564,876	462,298	1,289,693	2,316,867	354,355	2,213,539	2,567,894
2019	388,837	593,948	982,785	567,331	464,306	1,295,296	2,326,933	355,894	2,223,157	2,579,051
2020	389,816	595,444	985,260	568,759	465,475	1,298,557	2,332,791	356,790	2,228,754	2,585,544
2021	448,374	684,891	1,133,265	654,197	535,399	1,493,625	2,683,221	410,387	2,563,555	2,973,942
2022	336,173	513,505	849,678	490,492	401,421	1,119,862	2,011,775	307,692	1,922,054	2,229,746
2023	432,470	660,598	1,093,068	630,993	516,408	1,440,647	2,588,048	395,831	2,472,626	2,868,457
2024	376,504	575,109	951,613	549,336	449,579	1,254,210	2,253,125	344,606	2,152,640	2,497,246
2025	214,241	327,253	541,494	312,587	255,823	713,682	1,282,092	196,090	1,224,914	1,421,004
2026	77,991	119,131	197,122	113,792	93,128	259,803	466,723	71,383	445,909	517,292
2027	43,237	66,044	109,281	63,084	51,629	144,031	258,744	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	11,175,864	17,197,515	28,373,379	15,952,915	13,513,342	37,757,954	67,224,211	10,352,063	61,591,546	71,943,609

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	165,364	7,980	0	366,285	2,673,847	10,826	14,465	357,986	3,596,753
1998	159,011	7,672	0	352,211	2,571,110	10,410	13,909	344,232	3,458,555
1999	218,784	10,373	0	485,897	3,371,115	14,376	19,166	476,017	4,595,728
2000	412,322	19,251	0	914,245	5,769,895	27,068	36,074	896,380	8,075,235
2001	409,482	19,118	0	907,948	5,730,150	26,882	35,826	890,205	8,019,611
2002	405,455	18,930	0	899,018	5,673,795	26,617	35,473	881,450	7,940,738
2003	402,928	18,813	0	893,416	5,638,443	26,452	35,252	875,958	7,891,262
2004	407,993	19,049	0	904,647	5,709,319	26,784	35,695	886,969	7,990,456
2005	405,838	18,948	0	899,868	5,679,156	26,643	35,507	882,283	7,948,243
2006	399,118	18,635	0	884,968	5,585,124	26,201	34,919	867,675	7,816,640
2007	397,676	18,567	0	881,770	5,564,939	26,107	34,793	864,539	7,788,391
2008	403,168	18,824	0	893,948	5,641,795	26,467	35,273	876,479	7,895,954
2009	403,997	18,862	0	895,787	5,653,405	26,522	35,346	878,283	7,912,202
2010	404,666	18,894	0	897,270	5,662,763	26,566	35,404	879,736	7,925,299
2011	405,532	18,934	0	899,190	5,674,879	26,622	35,480	881,619	7,942,256
2012	406,284	18,969	0	900,856	5,685,396	26,672	35,546	883,253	7,956,976
2013	403,862	18,856	0	895,486	5,651,504	26,513	35,334	877,987	7,909,542
2014	419,815	19,601	0	930,859	5,874,748	27,560	36,730	912,669	8,221,982
2015	410,333	19,158	0	909,835	5,742,065	26,938	35,900	892,056	8,036,285
2016	409,041	19,098	0	906,971	5,723,984	26,853	35,787	889,247	8,010,981
2017	407,367	19,020	0	903,259	5,700,558	26,743	35,641	885,608	7,978,196
2018	407,874	19,043	0	904,383	5,707,654	26,776	35,685	886,711	7,988,126
2019	409,646	19,126	0	908,313	5,732,455	26,893	35,840	890,563	8,022,836
2020	410,678	19,174	0	910,600	5,746,887	26,960	35,930	892,806	8,043,035
2021	472,369	22,055	0	1,047,389	6,610,179	31,010	41,328	1,026,922	9,251,252
2022	354,164	16,536	0	785,291	4,956,055	23,250	30,986	769,946	6,936,228
2023	455,615	21,272	0	1,010,238	6,375,717	29,910	39,862	990,497	8,923,111
2024	396,653	18,520	0	879,502	5,550,625	26,040	34,703	862,315	7,768,358
2025	225,707	10,538	0	500,462	3,158,464	14,817	19,747	490,682	4,420,417
2026	82,165	3,836	0	182,184	1,149,784	5,394	7,189	178,624	1,609,176
2027	45,551	2,127	0	101,000	637,424	2,990	3,985	99,027	892,104
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	12,006,379	560,378	0	27,126,301	173,840,859	784,772	1,046,104	25,977,670	241,342,463

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	626,151	362,776	139,565	39,802	230,058	10,972	286,779	81,146	808,482	207,472
1998	602,091	348,838	134,202	38,273	221,218	10,550	275,761	78,028	777,418	199,501
1999	826,108	479,470	184,524	52,650	304,166	14,475	642,815	107,060	1,041,566	277,200
2000	1,542,605	1,888,161	345,248	98,778	569,101	27,046	1,207,668	226,019	1,954,721	519,810
2001	1,531,979	1,875,155	342,870	98,098	565,181	26,860	1,199,349	224,462	1,941,256	516,229
2002	1,516,912	1,856,713	339,498	97,133	559,622	26,596	1,187,554	222,255	1,922,164	511,152
2003	1,507,461	1,845,144	337,382	96,528	556,135	26,430	1,180,154	220,870	1,910,188	507,967
2004	1,526,410	1,868,338	341,623	97,741	563,126	26,762	1,194,989	223,646	1,934,199	514,353
2005	1,518,345	1,858,467	339,818	97,225	560,151	26,621	1,188,676	222,465	1,923,980	511,635
2006	1,493,206	1,827,696	334,192	95,615	550,876	26,180	1,168,994	218,781	1,892,124	503,164
2007	1,487,809	1,821,090	332,984	95,269	548,885	26,085	1,164,770	217,990	1,885,286	501,346
2008	1,508,357	1,846,241	337,583	96,585	556,466	26,446	1,180,856	221,001	1,911,323	508,269
2009	1,511,461	1,850,040	338,278	96,784	557,611	26,500	1,183,286	221,457	1,915,256	509,315
2010	1,513,963	1,853,103	338,837	96,944	558,534	26,544	1,185,245	221,823	1,918,427	510,158
2011	1,517,202	1,857,067	339,562	97,152	559,729	26,601	1,187,781	222,297	1,922,531	511,250
2012	1,520,014	1,860,509	340,192	97,332	560,766	26,650	1,189,982	222,709	1,926,094	512,197
2013	1,510,952	1,849,418	338,164	96,751	557,424	26,491	1,182,888	221,382	1,914,612	509,144
2014	1,570,637	1,922,473	351,522	100,573	579,443	27,538	1,229,614	230,127	1,990,243	529,256
2015	1,535,164	1,879,054	343,583	98,302	566,356	26,916	1,201,843	224,929	1,945,293	517,303
2016	1,530,330	1,873,137	342,501	97,992	564,573	26,831	1,198,059	224,221	1,939,167	515,674
2017	1,524,067	1,865,471	341,099	97,591	562,262	26,721	1,193,155	223,303	1,931,231	513,563
2018	1,525,965	1,867,793	341,524	97,713	562,962	26,754	1,194,641	223,581	1,933,635	514,203
2019	1,532,595	1,875,909	343,008	98,137	565,408	26,871	1,199,831	224,552	1,942,037	516,437
2020	1,536,453	1,880,632	343,871	98,384	566,831	26,938	1,202,852	225,118	1,946,926	517,737
2021	1,767,258	2,163,138	395,527	113,163	651,980	30,985	1,383,543	258,935	2,239,392	595,511
2022	1,325,021	1,621,837	296,551	84,846	488,830	23,231	1,037,327	194,140	1,679,009	446,491
2023	1,704,574	2,086,412	381,498	109,150	628,855	29,886	1,334,469	249,750	2,159,961	574,388
2024	1,483,982	1,816,406	332,128	95,024	547,474	26,018	1,161,774	217,430	1,880,437	500,056
2025	844,428	1,033,587	188,990	54,072	311,528	14,805	661,082	123,724	1,070,022	284,546
2026	307,399	376,259	68,799	19,684	113,406	5,390	240,656	45,039	389,523	103,584
2027	170,418	208,593	38,141	10,912	62,871	2,988	133,416	24,969	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	44,728,494	51,375,786	10,020,683	2,864,656	16,518,495	785,549	33,634,966	6,476,748	56,686,942	15,057,878

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	28,259	13,168,230	112,960	16,102,652	21,382	2,674	4,872	28,928	0	21,970,359
1998	27,174	12,662,268	108,619	15,483,941	20,562	2,571	4,685	27,818	0	21,126,192
1999	53,545	17,454,651	149,123	21,587,353	28,348	3,543	6,765	38,656	0	29,200,538
2000	115,027	32,491,471	276,029	41,261,684	52,940	16,067	13,118	82,125	0	55,346,277
2001	114,235	32,267,660	274,128	40,977,462	52,575	15,956	13,028	81,559	0	54,965,036
2002	113,111	31,950,308	271,432	40,574,450	52,058	15,799	12,900	80,757	0	54,424,456
2003	112,407	31,751,236	269,740	40,321,642	51,734	15,701	12,819	80,254	0	54,085,354
2004	113,820	32,150,354	273,131	40,828,492	52,384	15,898	12,980	81,262	0	54,765,215
2005	113,218	31,980,499	271,688	40,612,788	52,107	15,814	12,912	80,833	0	54,475,882
2006	111,344	31,450,988	267,190	39,940,350	51,245	15,553	12,698	79,496	0	53,573,908
2007	110,941	31,337,321	266,224	39,796,000	51,059	15,496	12,652	79,207	0	53,380,284
2008	112,474	31,770,113	269,901	40,345,615	51,764	15,710	12,827	80,301	0	54,117,508
2009	112,705	31,835,489	270,456	40,428,638	51,871	15,743	12,853	80,467	0	54,228,872
2010	112,892	31,888,187	270,904	40,495,561	51,957	15,769	12,875	80,601	0	54,318,641
2011	113,133	31,956,413	271,483	40,582,201	52,068	15,802	12,902	80,772	0	54,434,854
2012	113,343	32,015,638	271,987	40,657,413	52,165	15,832	12,926	80,923	0	54,535,742
2013	112,667	31,824,781	270,365	40,415,039	51,854	15,737	12,849	80,440	0	54,210,633
2014	117,118	33,081,915	281,045	42,011,504	53,902	16,359	13,357	83,618	0	56,352,049
2015	114,472	32,334,753	274,698	41,062,666	52,684	15,990	13,055	81,729	0	55,079,323
2016	114,112	32,232,936	273,833	40,933,366	52,519	15,939	13,014	81,472	0	54,905,888
2017	113,645	32,101,017	272,712	40,765,837	52,304	15,874	12,961	81,139	0	54,681,177
2018	113,786	32,140,982	273,051	40,816,590	52,369	15,894	12,977	81,240	0	54,749,251
2019	114,281	32,280,633	274,238	40,993,937	52,596	15,963	13,033	81,592	0	54,987,134
2020	114,569	32,361,906	274,928	41,097,145	52,729	16,003	13,066	81,798	0	55,125,573
2021	131,779	37,223,281	316,228	47,270,720	60,650	18,407	15,029	94,086	0	63,406,486
2022	98,803	27,908,569	237,095	35,441,750	45,473	13,801	11,268	70,542	0	47,539,719
2023	127,105	35,902,974	305,011	45,594,033	58,498	17,754	14,496	90,748	0	61,157,465
2024	110,656	31,256,716	265,539	39,693,640	50,928	15,456	12,620	79,004	0	53,242,986
2025	62,966	17,785,965	151,099	22,586,814	28,979	8,795	7,181	44,955	0	30,296,776
2026	22,922	6,474,671	55,005	8,222,337	10,549	3,202	2,614	16,365	0	11,029,015
2027	12,708	3,589,467	30,494	4,558,349	5,848	1,775	1,449	9,072	0	6,114,329
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	3,698,487	943,756,394	8,018,891	1,193,623,969	1,522,202	434,427	375,625	2,332,254	0	1,604,839,885

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	21,132	76,669	0	0	0
1963	0	0	0	151,051	190,362	448,046	789,459	0	0	0
1964	0	0	0	185,691	277,596	621,810	1,085,097	6,059	20,500	26,559
1965	0	0	0	264,383	404,537	1,158,837	1,827,757	11,426	31,741	43,167
1966	18,080	0	18,080	292,408	421,959	1,413,838	2,128,205	20,183	49,661	69,843
1967	41,609	0	41,609	385,390	548,752	1,864,173	2,798,315	37,976	84,159	122,136
1968	128,726	0	128,726	439,272	633,477	2,179,537	3,252,286	63,524	133,083	196,607
1969	254,848	0	254,848	509,292	583,757	2,299,889	3,392,938	118,159	235,273	353,432
1970	277,683	0	277,683	575,032	640,630	2,789,150	4,004,812	130,874	259,885	390,759
1971	227,611	0	227,611	512,668	675,529	2,808,206	3,996,403	131,690	262,452	394,142
1972	225,116	0	225,116	595,964	822,733	3,028,941	4,447,638	137,449	274,499	411,948
1973	221,231	31,399	252,630	581,694	716,828	3,121,981	4,420,503	134,243	269,331	403,574
1974	240,640	32,973	273,613	621,830	747,270	3,326,219	4,695,319	135,250	271,888	407,138
1975	237,607	36,329	273,936	678,711	793,393	3,215,246	4,687,350	151,574	302,777	454,351
1976	271,444	40,877	312,321	791,294	943,802	3,363,743	5,098,839	260,651	505,757	766,408
1977	293,781	45,141	338,922	758,978	922,543	3,304,667	4,986,188	270,375	527,183	797,558
1978	274,027	49,226	323,253	846,546	936,161	3,713,792	5,496,499	277,011	542,731	819,743
1979	289,639	53,391	343,030	941,445	1,009,911	3,820,751	5,772,107	274,791	541,913	816,704
1980	311,013	86,136	397,149	1,092,939	1,174,144	4,120,294	6,387,377	313,936	599,034	912,970
1981	347,959	112,926	460,885	1,198,170	1,349,476	4,508,801	7,056,447	338,751	655,170	993,921
1982	438,523	141,929	580,452	1,278,888	1,369,887	4,942,626	7,591,401	359,900	741,040	1,100,940
1983	354,997	163,422	518,419	1,148,326	1,260,489	4,911,474	7,320,289	388,903	760,575	1,149,478
1984	467,597	246,884	714,481	1,454,315	1,478,750	6,871,497	9,804,562	441,216	859,553	1,300,769
1985	736,437	386,603	1,123,040	1,947,531	2,225,458	7,797,745	11,970,734	532,384	1,028,432	1,560,816
1986	1,120,736	714,803	1,835,539	1,815,262	2,014,466	8,195,109	12,024,837	568,440	1,096,534	1,664,974
1987	1,774,876	1,583,464	3,358,340	2,310,840	2,506,026	7,981,524	12,798,390	602,335	1,207,490	1,809,824
1988	2,350,965	2,526,528	4,877,493	2,370,367	2,774,795	7,831,557	12,976,719	704,766	1,498,189	2,202,955
1989	2,550,248	3,703,697	6,253,945	2,351,467	2,515,841	7,580,134	12,447,442	804,272	1,873,387	2,677,660
1990	2,901,558	3,850,907	6,752,465	2,784,347	2,930,149	8,356,687	14,071,183	965,074	2,105,046	3,070,120
1991	2,941,690	4,172,233	7,113,923	2,050,981	2,384,632	6,432,161	10,867,774	1,011,428	2,425,592	3,437,021
1992	2,799,120	4,146,756	6,945,876	2,516,746	2,927,535	7,658,350	13,102,631	1,150,556	2,585,790	3,736,346
1993	2,857,069	4,174,517	7,031,586	3,368,885	2,977,791	8,851,447	15,198,123	1,217,242	2,785,488	4,002,730
1994	2,989,381	4,227,418	7,216,799	3,402,445	3,586,651	9,614,894	16,603,990	1,363,353	3,582,093	4,945,446
1995	2,962,910	4,407,264	7,370,174	3,649,168	3,313,816	8,395,346	15,358,330	1,662,849	6,273,306	7,936,154
1996	3,042,469	4,887,142	7,929,611	3,227,918	3,158,210	9,151,586	15,537,714	2,635,317	15,287,524	17,922,841
1997	3,029,600	4,736,861	7,766,461	3,479,669	3,146,033	9,339,583	15,965,285	3,072,931	23,765,871	26,838,802
1998	2,946,334	4,603,174	7,549,508	3,181,412	3,219,671	9,127,816	15,528,899	3,339,532	28,337,147	31,676,679
1999	3,191,018	5,167,877	8,358,895	3,996,246	3,822,675	11,771,151	19,590,072	3,887,097	29,495,113	33,382,210
2000	3,988,303	5,992,243	9,980,546	7,478,536	4,540,412	11,885,423	23,904,371	4,365,073	33,590,641	37,955,714
2001	3,904,047	5,892,425	9,796,472	7,412,026	4,635,246	12,608,737	24,656,009	5,969,233	33,658,164	39,627,397
2002	3,955,648	5,970,493	9,926,141	7,469,840	4,685,082	12,766,926	24,921,848	5,931,661	34,198,776	40,130,436
2003	3,941,506	5,950,859	9,892,365	7,350,856	4,620,321	12,467,036	24,438,213	5,854,572	34,049,863	39,904,435
2004	3,912,827	5,904,957	9,817,784	7,151,283	4,470,573	12,080,518	23,702,374	5,661,541	33,689,240	39,350,781
2005	3,961,108	5,947,031	9,908,139	7,651,945	4,600,090	12,185,544	24,437,579	5,828,569	33,984,287	39,812,855
2006	3,972,549	5,941,982	9,914,531	7,680,019	4,615,879	12,219,992	24,515,890	5,844,843	33,986,821	39,831,663
2007	3,978,617	5,932,857	9,911,474	7,623,787	4,580,681	12,135,525	24,339,993	5,800,530	33,900,915	39,701,444
2008	3,996,587	5,940,971	9,937,558	7,675,057	4,613,831	12,217,004	24,505,892	5,807,182	33,934,311	39,741,492
2009	4,019,261	5,952,123	9,971,384	7,661,085	4,605,386	12,197,286	24,463,757	5,824,636	33,969,444	39,794,079
2010	4,045,052	5,965,987	10,011,039	7,770,520	4,673,283	12,359,242	24,803,045	5,896,537	34,102,362	39,998,898
2011	4,062,065	5,972,198	10,034,263	7,733,726	4,649,731	12,305,669	24,689,126	5,876,861	34,074,777	39,951,637
2012	4,086,553	5,984,395	10,070,948	7,746,702	4,657,917	12,325,514	24,730,133	5,908,094	34,134,639	40,042,732
2013	4,035,686	5,913,947	9,949,633	7,324,480	4,390,375	11,574,077	23,288,932	5,661,355	33,677,371	39,338,725
2014	4,043,065	5,912,146	9,955,211	7,069,760	4,214,422	11,152,731	22,436,913	5,536,767	33,504,097	39,040,864
2015	4,053,290	5,889,416	9,942,706	6,967,975	4,106,768	10,734,494	21,809,237	5,495,154	33,390,391	38,885,545
2016	4,059,976	5,886,702	9,946,678	6,977,256	4,106,508	10,632,777	21,716,541	5,504,964	33,400,914	38,905,878
2017	4,052,914	5,876,231	9,929,145	6,803,158	4,019,431	10,382,157	21,204,746	5,429,247	33,254,829	38,684,076
2018	4,013,591	5,890,039	9,903,630	6,695,042	3,998,015	10,306,572	20,999,629	5,458,859	33,309,661	38,768,519
2019	4,010,231	5,902,448	9,912,679	6,667,246	4,021,265	10,345,373	21,033,884	5,517,052	33,420,183	38,937,235
2020	4,008,112	5,880,961	9,889,073	6,503,823	3,930,748	10,126,931	20,561,502	5,410,131	33,228,144	38,638,274
2021	4,065,680	5,967,316	10,032,996	6,560,418	3,984,784	10,284,673	20,829,875	5,448,490	33,533,631	38,982,121
2022	3,937,928	5,784,373	9,722,301	6,327,401	3,807,627	9,806,061	19,941,089	5,287,079	32,785,212	38,072,291
2023	4,037,383	5,902,963	9,940,346	6,512,503	3,950,785	10,192,196	20,655,484	5,402,668	33,383,616	38,786,285
2024	3,924,308	5,813,503	9,737,811	6,405,322	3,868,070	9,967,417	20,240,809	5,360,910	33,080,823	38,441,733
2025	3,817,402	5,573,096	9,390,498	6,171,356	3,676,513	9,431,357	19,279,226	5,217,237	32,160,951	37,378,188
2026	3,679,903	5,363,589	9,043,492	6,074,847	3,576,988	9,127,697	18,779,532	5,031,268	31,266,299	36,297,567
2027	3,634,698	5,299,435	8,934,133	5,951,833	3,490,920	8,904,416	18,347,169	4,956,138	30,984,840	35,940,977
2028	3,591,814	5,232,890	8,824,704	5,902,198	3,447,460	8,778,531	18,128,189	4,924,282	30,748,912	35,673,194
2029	3,581,806	5,222,598	8,804,404	5,860,349	3,421,883	8,716,707	17,998,939	4,896,370	30,694,057	35,590,427
2030	3,575,732	5,211,166	8,786,898	5,883,792	3,436,801	8,751,788	18,072,381	4,913,473	30,720,536	35,634,009
2031	3,556,288	5,187,103	8,743,391	5,814,554	3,394,055	8,649,611	17,858,220	4,872,420	30,633,157	35,505,577
2032	3,554,053	5,175,675	8,729,728	5,877,950	3,433,421	8,743,062	18,054,433	4,916,176	30,718,104	35,634,279
2033	3,549,718	5,151,122	8,700,840	5,960,970	3,485,531	8,866,727	18,313,228	5,003,425	30,878,870	35,882,294
2034	3,467,523	5,062,685	8,530,208	5,875,889	3,433,419	8,741,340	18,050,648	4,931,557	30,746,330	35,677,886
2035	3,327,893	4,914,262	8,242,155	5,856,554	3,422,448	8,714,404	17,993,406	4,910,450	30,706,177	35,616,627
Total	182,519,659	259,692,064	442,211,723	302,219,387	208,016,191	578,625,255	1,088,860,833	222,176,317	1,312,776,549	1,534,952,866

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	267,827	0	0	0	0	294,105
1968	225,518	19,334	54,628	445,746	1,709,676	16,051	19,623	307,678	2,798,254
1969	241,696	10,795	87,621	525,451	2,729,298	15,686	19,355	460,167	4,090,069
1970	306,872	34,231	94,721	574,381	3,879,227	20,258	30,376	522,289	5,462,355
1971	328,376	36,959	95,743	606,288	5,200,451	25,973	34,656	713,606	7,042,052
1972	382,134	40,220	98,837	632,023	7,168,835	25,257	63,766	1,988,330	10,399,402
1973	399,540	38,842	97,599	1,026,298	7,299,081	27,588	39,238	783,199	9,711,385
1974	508,355	40,056	98,509	1,145,204	8,010,185	28,300	42,532	1,044,366	10,917,507
1975	681,114	40,505	106,753	1,197,580	9,391,774	29,978	48,147	1,557,868	13,053,719
1976	720,347	43,026	108,133	1,324,255	10,636,652	31,400	52,079	1,443,136	14,359,028
1977	580,595	38,943	112,604	1,367,823	10,951,286	33,148	54,188	1,139,023	14,277,610
1978	699,204	41,207	115,573	1,566,304	13,284,871	37,560	59,002	1,173,093	16,976,814
1979	782,706	47,779	114,305	1,669,374	15,361,834	41,692	70,593	1,727,236	19,815,519
1980	963,736	49,514	126,003	1,770,689	17,002,249	46,645	94,892	1,673,487	21,727,215
1981	1,212,675	83,880	134,223	2,431,242	22,605,050	65,103	100,602	2,284,633	28,917,408
1982	1,248,791	70,074	135,111	2,524,098	25,001,140	69,267	108,247	2,279,421	31,436,149
1983	1,183,055	52,424	149,256	2,085,489	24,648,084	74,039	87,404	506,924	28,786,675
1984	1,492,674	28,406	164,560	3,396,826	33,375,860	92,920	121,385	1,542,424	40,215,055
1985	1,768,544	129,838	184,961	3,891,658	39,346,032	116,180	139,464	2,816,725	48,393,402
1986	2,010,449	79,213	180,501	4,080,295	43,446,845	135,308	153,118	3,655,715	53,741,444
1987	1,885,720	95,131	179,928	4,571,294	42,719,373	135,918	151,357	3,748,683	53,487,404
1988	1,970,765	109,509	193,791	4,734,951	44,656,168	136,859	146,514	3,903,260	55,851,817
1989	2,125,485	101,636	187,970	4,677,817	46,848,719	135,650	166,339	4,384,756	58,628,372
1990	1,884,299	86,840	221,449	4,826,879	45,625,487	119,710	148,641	3,962,927	56,876,232
1991	1,690,297	80,129	220,343	4,536,385	37,501,142	102,454	134,651	3,503,937	47,769,338
1992	2,236,113	105,471	241,524	5,548,211	48,698,238	142,746	175,634	4,542,767	61,690,704
1993	2,458,268	119,951	265,031	5,806,704	54,599,405	160,037	195,199	5,296,621	68,901,216
1994	2,263,151	107,460	306,435	5,211,067	52,070,421	144,113	178,012	4,669,453	64,950,112
1995	2,859,552	115,373	304,376	6,622,205	60,530,101	179,258	210,345	5,528,155	76,349,365
1996	2,027,476	124,167	389,286	6,403,012	58,078,281	175,027	188,431	6,994,666	74,380,346
1997	2,764,023	100,468	276,769	6,522,727	57,394,327	136,366	212,156	4,716,051	72,122,887
1998	2,615,737	120,068	381,975	5,827,099	54,047,056	141,944	204,122	4,981,722	68,319,723
1999	2,730,875	137,422	355,010	6,526,307	58,378,648	183,976	219,887	7,546,597	76,078,722
2000	3,165,025	173,133	385,608	7,213,269	64,007,012	203,867	252,090	7,694,005	83,094,009
2001	3,095,168	153,770	368,798	7,614,721	60,631,733	209,350	256,125	6,692,119	79,021,785
2002	3,089,180	153,620	373,467	7,647,112	60,671,903	210,257	257,116	6,685,244	79,087,900
2003	3,071,978	152,676	373,702	7,554,728	60,314,537	208,994	255,743	6,647,091	78,579,450
2004	2,982,382	147,669	366,674	7,331,359	58,338,508	202,541	249,542	6,450,540	76,069,216
2005	3,028,064	150,260	366,684	7,452,324	59,414,508	206,000	252,030	6,552,108	77,421,979
2006	3,035,814	150,763	366,603	7,472,020	59,587,806	206,661	252,814	6,569,717	77,642,199
2007	3,007,987	149,211	366,640	7,404,810	59,054,619	204,589	250,422	6,507,980	76,946,259
2008	3,042,728	151,113	366,664	7,483,320	59,606,904	207,138	254,182	6,584,850	77,696,900
2009	3,017,153	149,666	366,689	7,427,727	59,227,474	205,213	251,015	6,528,013	77,172,951
2010	3,081,185	153,259	366,624	7,576,404	60,364,070	210,010	257,360	6,670,188	78,679,101
2011	3,049,210	151,442	367,721	7,501,645	59,810,704	207,558	254,034	6,598,743	77,941,058
2012	3,044,709	151,181	367,741	7,496,494	59,822,442	207,213	252,828	6,588,701	77,931,310
2013	2,997,266	148,536	367,876	7,366,763	58,641,737	203,672	250,917	6,483,402	76,460,170
2014	2,917,388	143,890	365,358	7,175,480	57,108,033	197,526	243,214	6,305,197	74,456,087
2015	2,921,731	144,223	362,044	7,108,152	57,136,610	197,940	244,433	6,315,284	74,430,418
2016	2,967,409	146,806	355,978	7,151,160	57,946,940	201,378	249,049	6,416,792	75,435,513
2017	2,908,837	143,528	341,783	6,880,965	56,860,243	197,002	243,657	6,286,800	73,862,816
2018	2,914,620	143,845	319,230	6,782,926	57,063,923	188,910	243,399	6,299,538	73,956,392
2019	2,969,430	146,911	310,660	6,850,500	58,035,307	192,499	248,786	6,421,202	75,175,296
2020	2,915,591	143,875	308,814	6,687,858	56,985,123	188,207	244,151	6,301,631	73,775,251
2021	2,966,511	146,152	307,639	6,777,136	57,647,110	191,311	248,560	6,411,868	74,696,288
2022	2,819,285	138,998	307,209	6,435,901	55,443,898	181,298	235,599	6,090,358	71,652,547
2023	2,949,688	145,365	306,595	6,724,267	57,380,843	190,109	247,338	6,375,291	74,319,497
2024	2,848,350	140,229	306,169	6,490,517	55,796,270	183,039	238,008	6,152,971	72,155,554
2025	2,690,534	132,986	305,581	6,144,626	53,706,454	172,777	223,807	5,810,504	69,187,270
2026	2,622,538	130,530	305,352	5,996,926	52,983,082	168,979	219,212	5,666,165	68,092,785
2027	2,544,741	126,507	304,653	5,818,271	51,756,046	163,447	211,784	5,495,157	66,420,607
2028	2,505,619	124,739	302,311	5,729,386	51,226,561	160,912	208,483	5,410,355	65,668,367
2029	2,488,449	123,776	301,890	5,686,565	50,917,969	159,569	206,811	5,372,287	65,257,317
2030	2,502,794	124,584	301,552	5,715,992	51,161,909	160,580	208,325	5,404,166	65,579,903
2031	2,468,222	122,637	300,148	5,618,382	50,566,078	157,586	204,738	5,327,305	64,765,097
2032	2,498,994	124,367	300,120	5,691,267	51,104,077	159,909	207,860	5,395,639	65,482,234
2033	2,529,244	126,071	299,595	5,764,010	51,769,940	162,053	209,845	5,462,904	66,323,663
2034	2,499,431	124,393	299,095	5,682,905	51,145,410	159,670	207,636	5,396,647	65,515,188
2035	2,522,554	125,692	298,429	5,735,543	51,648,814	161,167	209,240	5,447,955	66,149,395
Total	147,927,967	7,435,274	17,912,312	347,746,013	2,997,080,408	9,615,342	12,220,108	314,217,632	3,854,155,057

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	33,351	0	0	0	0	0	0	0	51,776	0
1964	62,921	27,471	14,439	4,374	36,574	1,144	28,462	8,212	82,882	34,412
1965	118,701	53,051	25,116	7,200	40,804	2,084	50,359	15,235	135,181	35,374
1966	215,957	101,347	44,766	12,489	73,212	3,756	90,472	27,701	232,692	61,515
1967	417,815	210,983	86,188	23,491	141,524	7,290	175,317	54,067	433,699	115,667
1968	736,546	491,535	152,801	41,540	251,384	12,880	310,927	95,536	782,747	209,082
1969	1,059,784	742,590	225,474	61,272	371,235	18,707	458,452	138,165	1,206,740	321,996
1970	1,378,038	942,688	315,498	89,767	519,705	25,249	632,481	184,974	1,779,533	467,925
1971	1,705,583	1,137,204	432,863	128,455	713,270	31,859	856,465	231,446	2,541,067	659,907
1972	2,183,231	1,382,225	603,788	185,977	990,533	43,795	1,177,918	287,800	3,777,843	950,870
1973	2,334,911	1,430,611	747,866	191,105	1,217,727	46,084	1,268,353	313,631	4,046,293	961,625
1974	2,455,337	1,526,094	771,365	204,190	1,257,617	48,958	1,326,890	331,889	4,483,573	1,105,677
1975	2,672,631	1,617,009	816,702	219,409	1,332,907	53,268	1,412,321	355,459	4,658,806	1,211,442
1976	3,136,870	1,653,655	873,735	232,251	1,425,624	57,758	1,488,355	381,467	4,858,404	1,282,847
1977	3,118,449	1,741,464	774,251	245,235	1,267,943	54,237	1,575,348	406,813	5,114,321	1,348,956
1978	3,566,280	1,874,456	973,409	255,592	1,568,693	56,832	1,622,101	420,220	5,112,038	1,378,227
1979	4,239,627	1,954,195	1,058,691	267,916	1,690,915	60,311	1,796,951	449,952	5,156,959	1,342,943
1980	4,923,632	2,092,525	1,167,896	295,476	1,891,307	67,632	1,968,466	499,247	5,667,741	1,485,817
1981	5,749,811	2,561,857	1,322,558	328,948	2,141,322	100,780	2,286,019	603,471	6,482,059	1,689,022
1982	5,508,806	2,724,839	1,410,235	346,851	2,285,043	82,324	2,260,233	642,197	6,773,012	1,930,360
1983	6,257,743	2,795,342	1,930,019	380,973	3,119,545	88,413	2,455,228	658,827	6,984,975	1,809,460
1984	7,631,172	3,874,051	3,030,462	497,723	4,875,931	96,523	2,724,094	728,045	8,073,566	2,598,968
1985	9,487,227	4,340,043	3,864,025	602,069	6,210,929	103,738	2,913,554	933,488	8,913,760	2,687,550
1986	9,428,175	4,975,389	4,324,284	647,778	6,955,239	130,253	3,087,804	1,224,083	9,163,286	3,399,305
1987	9,461,648	4,833,624	4,191,885	678,232	6,831,269	240,906	3,150,515	1,255,292	10,564,843	3,399,697
1988	9,059,741	5,019,453	4,248,720	704,559	6,997,828	158,878	3,324,191	1,044,448	11,115,730	3,271,922
1989	10,949,980	5,028,727	3,955,854	691,340	6,580,438	210,667	3,404,624	1,747,006	10,832,544	3,454,469
1990	12,340,723	5,496,709	4,647,541	729,381	7,664,576	331,202	3,635,151	1,954,099	11,743,555	4,222,070
1991	9,200,209	4,610,507	3,175,079	681,952	5,235,939	220,921	4,442,138	1,640,340	10,856,724	3,570,672
1992	11,756,407	5,800,387	3,329,398	606,221	5,490,338	175,038	5,423,256	1,532,615	10,892,851	3,621,360
1993	12,169,334	5,446,055	3,529,959	609,840	5,821,171	211,946	5,309,351	1,754,281	11,784,248	3,950,333
1994	14,235,578	6,012,599	3,579,675	691,738	5,902,982	278,006	6,313,837	2,090,659	12,702,389	4,763,033
1995	14,103,955	6,388,286	4,401,868	659,956	7,259,271	212,291	5,507,209	1,952,837	12,189,579	4,472,006
1996	14,312,732	6,525,075	7,082,824	665,388	11,681,156	206,095	5,352,541	2,257,540	12,682,588	4,513,424
1997	15,099,592	6,513,186	6,969,221	750,645	8,457,028	207,937	6,026,911	2,342,570	14,400,214	4,898,690
1998	13,659,531	6,163,750	6,039,479	720,941	6,968,724	209,915	7,672,072	1,952,939	14,305,589	4,196,732
1999	16,086,079	7,019,489	5,664,642	846,989	7,958,075	218,409	8,409,086	2,493,055	16,541,603	5,459,438
2000	19,306,138	13,656,477	6,239,879	1,029,545	9,348,262	407,305	9,734,086	3,751,043	18,830,637	5,576,854
2001	24,844,437	17,513,735	4,530,430	1,394,194	7,621,058	422,030	16,883,913	3,826,056	24,864,130	6,475,560
2002	25,726,443	18,087,103	4,690,264	1,433,208	7,734,691	436,555	17,430,459	3,962,223	24,535,038	6,667,807
2003	25,186,938	16,810,111	4,612,929	1,398,402	7,607,135	429,084	17,090,642	3,879,322	23,852,629	6,505,539
2004	23,001,508	16,418,131	4,212,561	1,302,677	6,946,791	392,645	15,715,395	3,542,542	22,177,525	6,023,153
2005	24,657,791	16,765,132	4,531,523	1,412,056	7,472,885	420,152	11,455,257	3,797,464	24,016,458	6,493,803
2006	24,791,317	17,221,509	4,534,793	1,384,527	7,478,269	422,319	12,064,089	3,818,114	23,545,571	6,413,590
2007	24,369,901	17,262,392	4,474,315	1,379,176	7,378,527	415,317	12,491,421	3,753,314	23,501,802	6,377,047
2008	24,373,710	17,415,904	4,465,800	1,372,418	7,364,474	415,404	13,079,376	3,753,760	23,365,424	6,349,592
2009	24,581,029	17,523,197	4,518,474	1,390,543	7,451,357	418,856	13,741,502	3,785,656	23,700,077	6,432,727
2010	25,031,194	17,877,152	4,605,061	1,407,139	7,594,167	426,329	14,520,118	3,854,889	24,013,986	6,528,472
2011	24,793,738	17,762,296	4,562,034	1,402,416	7,523,203	422,422	15,001,101	3,818,409	23,910,264	6,490,193
2012	25,258,732	18,066,415	4,637,582	1,421,179	7,647,801	430,156	15,870,818	3,889,961	24,187,979	6,574,402
2013	23,180,581	16,572,614	4,244,374	1,308,041	6,985,883	396,189	15,233,362	3,575,391	22,225,606	6,042,558
2014	22,253,534	15,843,300	4,069,538	1,281,490	6,711,511	380,219	15,234,566	3,428,011	21,791,555	5,888,603
2015	21,822,097	15,569,982	3,964,413	1,238,553	6,538,121	373,004	14,959,967	3,362,854	21,016,596	5,703,926
2016	22,093,304	15,736,017	4,026,634	1,274,720	6,640,759	377,441	15,161,691	3,405,972	21,617,410	5,837,730
2017	21,140,050	15,132,344	3,840,719	1,212,096	6,334,123	361,421	14,564,097	3,261,931	20,558,351	5,565,934
2018	21,460,243	15,199,590	3,891,744	1,229,359	6,418,290	366,484	14,843,917	3,313,050	20,786,987	5,628,517
2019	21,588,963	14,963,435	3,919,585	1,240,647	6,464,223	368,161	14,874,173	3,333,102	20,969,443	5,668,597
2020	20,458,081	14,170,491	3,654,102	1,159,785	6,026,352	348,113	14,164,440	3,153,716	19,418,695	5,269,485
2021	20,305,510	14,026,090	3,575,701	1,120,501	5,896,998	344,618	14,032,279	3,124,555	18,719,022	5,108,996
2022	19,373,190	12,963,964	3,369,486	1,070,476	5,556,986	328,470	13,326,903	2,983,773	17,683,385	4,825,875
2023	19,944,578	13,616,627	3,481,442	1,114,042	5,741,567	338,132	13,740,268	3,068,415	18,399,893	5,003,754
2024	19,184,803	12,883,491	3,310,659	1,054,455	5,459,925	325,297	13,190,808	2,953,122	17,321,101	4,731,879
2025	19,115,826	12,491,724	3,287,004	1,043,038	5,421,052	323,529	13,069,488	2,947,181	17,050,824	4,665,842
2026	18,813,709	12,077,944	3,197,048	1,030,820	5,272,805	317,988	12,775,863	2,904,634	16,662,618	4,547,379
2027	18,492,736	11,559,023	3,120,691	993,753	5,146,890	312,503	12,542,890	2,856,270	16,011,888	4,395,569
2028	18,287,494	11,601,020	3,063,923	972,071	5,053,293	308,929	12,387,104	2,826,033	15,579,801	4,291,350
2029	18,166,005	11,239,247	3,061,677	989,921	5,049,600	306,883	12,306,097	2,807,443	15,915,370	4,348,351
2030	18,169,379	11,253,786	3,062,494	991,564	5,050,949	306,929	12,309,612	2,808,231	15,937,073	4,352,524
2031	17,927,364	10,845,662	2,987,035	944,169	4,926,478	302,867	12,182,129	2,771,542	15,119,181	4,175,298
2032	18,074,920	11,090,944	3,042,715	982,184	5,018,330	305,312	12,242,310	2,794,632	15,814,816	4,322,113
2033	18,893,695	11,478,680	3,173,093	1,006,414	5,233,364	318,870	12,825,780	2,922,106	16,154,664	4,443,277
2034	18,069,387	10,926,921	3,028,780	961,692	4,995,343	305,170	12,283,836	2,797,475	15,458,620	4,252,589
2035	18,916,932	10,852,996	3,175,253	1,036,789	5,236,947	319,162	12,804,096	2,929,949	16,636,269	4,525,741
Total	1,012,513,364	639,583,914	225,946,331	57,291,323	363,576,187	17,270,351	596,071,322	152,771,743	978,476,098	277,387,419

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	3,219	79,888
1963	0	691,432	0	776,559	0	0	0	0	55,621	1,621,639
1964	21,378	1,261,584	9,386	1,593,239	0	0	0	0	83,871	2,791,493
1965	21,885	2,182,389	17,781	2,705,160	0	0	405	405	128,944	4,785,098
1966	37,995	3,903,334	33,453	4,838,689	0	0	565	565	148,285	7,353,158
1967	71,340	7,699,870	68,210	9,505,461	0	0	562	562	204,629	12,966,817
1968	129,011	15,329,317	142,909	18,686,215	0	1,050	1,440	2,490	279,263	25,343,841
1969	198,912	23,170,450	215,370	28,189,147	0	1,225	4,123	5,348	349,208	36,634,990
1970	289,852	30,640,203	273,810	37,539,723	0	3,848	17,128	20,976	386,284	48,082,592
1971	409,633	40,006,076	342,676	49,196,504	0	4,546	19,200	23,746	375,846	61,256,304
1972	537,542	55,344,012	422,586	67,888,120	0	4,929	21,164	26,093	401,360	83,799,677
1973	588,337	59,951,814	435,938	73,534,295	0	7,059	21,792	28,851	375,839	88,727,077
1974	611,812	66,370,698	455,861	80,949,961	0	8,336	22,422	30,758	398,816	97,673,112
1975	645,016	72,193,131	478,703	87,666,804	0	9,416	23,536	32,952	408,036	106,577,148
1976	668,719	75,270,950	475,889	91,806,524	0	7,004	23,270	30,274	430,626	112,804,020
1977	696,926	73,702,740	507,369	90,554,052	0	16,917	24,073	40,990	423,367	111,418,687
1978	709,455	82,315,925	523,487	100,376,715	0	12,635	24,238	36,873	426,614	124,456,511
1979	713,284	83,967,179	526,722	103,225,645	0	16,575	28,365	44,940	446,652	130,464,597
1980	862,696	93,395,860	583,959	114,902,254	0	19,834	26,575	46,409	507,472	144,880,846
1981	947,395	112,540,401	672,897	137,426,540	0	21,682	34,577	56,259	517,022	175,428,482
1982	1,021,762	117,512,842	727,989	143,226,493	0	16,117	43,130	59,247	505,226	184,499,908
1983	1,076,721	119,361,793	854,642	147,773,681	0	15,202	29,424	44,626	553,078	186,146,246
1984	1,212,077	156,645,332	933,697	192,921,641	20,590	15,442	31,809	67,841	561,792	245,586,141
1985	1,288,256	195,865,725	994,042	238,204,406	24,050	16,976	32,418	73,444	680,398	302,006,240
1986	1,345,245	218,704,552	1,058,669	264,444,062	31,753	18,145	33,610	83,508	620,136	334,414,500
1987	1,380,096	205,232,686	1,056,712	252,277,405	37,071	17,794	33,397	88,262	686,858	324,506,483
1988	1,466,316	222,040,597	1,124,497	269,576,880	48,058	19,117	33,619	100,794	708,447	346,295,105
1989	1,505,971	230,702,022	1,232,777	280,296,419	61,184	20,809	37,202	119,195	768,165	361,191,198
1990	1,625,263	277,569,241	1,856,394	333,815,905	66,041	20,855	36,826	123,722	822,381	415,532,008
1991	1,676,062	220,837,849	1,550,371	267,698,763	180,212	22,526	42,214	244,952	567,846	337,699,617
1992	1,734,563	244,303,714	1,503,939	296,170,087	208,216	26,028	43,530	277,774	804,777	382,728,195
1993	1,885,912	217,800,395	1,551,737	271,824,562	209,613	26,203	47,602	283,418	964,987	368,206,622
1994	1,912,255	257,458,098	1,475,813	317,416,662	201,284	25,161	46,093	272,538	978,538	412,384,085
1995	1,977,327	226,057,108	1,568,929	286,750,622	216,944	27,118	50,035	294,097	905,433	394,964,175
1996	1,645,291	233,010,624	1,622,708	301,557,986	217,250	27,156	56,637	301,043	944,637	418,574,178
1997	1,733,347	245,847,544	1,777,829	315,024,714	236,300	29,847	59,929	326,076	802,600	438,846,825
1998	1,841,610	228,494,492	1,804,893	294,030,667	128,021	29,927	54,517	212,465	841,054	418,158,995
1999	2,180,936	277,151,140	1,899,397	351,928,338	254,675	31,834	59,256	345,765	901,037	490,585,039
2000	2,268,760	369,549,074	2,451,005	462,149,065	282,832	85,274	70,643	438,749	(120,297)	617,402,157
2001	2,582,788	361,346,036	3,455,943	475,760,310	282,517	674,645	72,001	1,029,163	(118,264)	629,772,872
2002	2,374,521	367,919,194	3,586,378	484,583,884	282,000	674,488	73,309	1,029,797	(118,380)	639,561,627
2003	2,427,436	343,223,698	3,326,295	456,350,160	281,676	674,390	74,758	1,030,824	(118,429)	610,077,019
2004	2,436,257	330,080,459	3,215,162	435,464,806	282,326	674,587	76,341	1,033,254	(118,477)	585,319,739
2005	2,673,310	361,485,549	3,475,914	468,657,294	282,049	674,503	77,694	1,034,246	(118,523)	621,153,570
2006	2,658,073	361,593,499	3,495,464	469,421,134	281,187	674,242	79,138	1,034,567	(118,566)	622,241,419
2007	3,460,644	359,193,077	3,419,698	467,476,631	281,001	674,185	80,750	1,035,936	(118,566)	619,293,172
2008	3,674,868	361,769,114	3,444,622	470,844,466	281,706	674,399	82,583	1,038,688	(118,566)	623,646,431
2009	3,725,749	366,810,453	3,469,319	477,548,939	281,813	674,432	84,267	1,040,512	(118,566)	629,873,057
2010	3,781,978	375,323,061	3,542,069	488,505,615	281,899	674,458	85,947	1,042,304	(118,566)	642,921,437
2011	3,759,774	374,369,056	3,515,372	487,330,278	282,010	674,491	87,869	1,044,370	(118,566)	640,872,167
2012	3,809,218	382,052,991	3,581,118	497,428,352	282,107	674,521	89,788	1,046,416	(118,566)	651,131,326
2013	3,488,474	353,790,252	3,267,567	460,310,892	281,796	674,426	91,842	1,048,064	(104,886)	610,291,531
2014	3,392,180	341,528,035	3,110,604	444,913,146	283,844	675,048	94,482	1,053,374	(96,315)	591,759,280
2015	3,281,640	335,536,026	3,051,805	436,418,984	282,626	674,679	96,144	1,053,449	(86,746)	582,453,593
2016	3,366,714	341,303,990	3,088,664	443,931,046	282,461	674,628	98,311	1,055,400	(81,350)	590,909,706
2017	3,200,567	328,558,830	2,955,248	426,685,711	282,246	674,563	98,260	1,055,069	(68,640)	571,352,924
2018	3,237,283	331,570,822	2,980,943	430,927,229	282,311	674,583	98,274	1,055,168	(44,647)	575,565,921
2019	3,260,594	332,184,446	2,952,378	431,787,747	282,538	674,652	95,701	1,052,891	(24,308)	577,875,425
2020	3,014,457	312,405,630	2,787,678	406,031,025	282,671	674,692	83,795	1,041,158	(17,849)	549,918,435
2021	2,881,940	307,111,290	2,747,410	398,994,910	290,592	677,096	84,931	1,052,619	(16,649)	544,572,161
2022	2,768,738	286,181,502	2,567,749	373,000,497	275,415	672,490	79,784	1,027,689	(16,447)	513,399,967
2023	2,828,639	295,395,304	2,672,559	385,345,220	288,440	676,443	83,011	1,047,894	(16,233)	530,078,493
2024	2,690,054	280,199,057	2,538,775	365,843,426	280,870	674,145	81,134	1,036,149	(16,101)	507,439,382
2025	2,732,160	274,187,290	2,502,187	358,837,145	258,921	667,484	75,693	1,002,098	(15,638)	495,058,788
2026	2,731,790	269,097,871	2,459,472	351,889,941	240,491	661,891	71,125	973,507	(15,506)	485,061,318
2027	2,654,412	256,224,350	2,358,601	336,669,576	235,790	660,464	69,957	966,211	(15,237)	467,263,437
2028	2,611,795	259,562,287	2,391,869	338,936,969	229,942	658,689	68,507	957,138	(14,895)	468,173,666
2029	2,650,596	252,556,174	2,311,261	331,708,625	229,942	658,689	68,505	957,136	(14,425)	460,302,423
2030	2,653,276	253,578,581	2,318,732	332,793,130	229,942	658,689	68,503	957,134	(13,994)	461,809,462
2031	2,540,055	244,217,413	2,236,540	321,175,733	229,942	658,689	68,502	957,133	(13,034)	448,992,118
2032	2,634,299	252,671,380	2,304,987	331,298,942	229,942	658,689	68,500	957,131	(13,144)	460,143,604
2033	2,703,630	259,972,951	2,383,173	341,509,697	229,942	658,689	68,500	957,131	(12,883)	471,673,971
2034	2,588,189	248,395,707	2,271,470	326,335,179	229,942	658,689	68,499	957,130	(11,710)	455,054,530
2035	2,759,184	256,153,788	2,292,494	337,639,600	229,942	658,689	68,497	957,128	(10,360)	466,587,951
Total	142,974,240	16,181,631,356	135,312,566	20,780,806,214	11,776,933	24,076,724	3,950,228	39,803,885	17,685,035	27,758,475,613

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	4.30	37.05
County of Butte	0.00	0.00	0.00	0.00	0.00	14.80	1.94	16.74
Plumas County Flood Control and Water Conservation District	21.85	3.20	0.00	0.00	25.05	21.82	8.77	55.64
Feather River Area	2.11	0.31	0.00	0.00	2.42	18.62	3.02	24.06
North Bay Area								
Napa County Flood Control and Water Conservation District	115.54	38.14	4.86	9.36	167.90	16.54	33.40	217.84
Solano County Water Agency	87.22	32.02	4.04	5.86	129.14	24.58	26.80	180.52
North Bay Area	98.41	34.44	4.33	7.24	144.42	21.40	29.41	195.23
South Bay Area								
Alameda County Flood Control and Water Conservation District, Zone 7	15.19	33.10	9.50	13.27	71.06	18.51	6.54	96.11
Alameda County Water District	20.83	26.50	7.72	10.86	65.91	20.46	8.32	94.69
Santa Clara Valley Water District	18.90	19.65	6.88	9.20	54.63	15.04	7.08	76.75
South Bay Area	21.05	24.49	7.43	9.90	62.87	16.60	7.87	87.34
San Joaquin Valley Area								
County of Kings	4.62	4.15	3.85	4.49	17.11	19.00	3.74	39.85
Dudley Ridge Water District	5.26	4.67	3.27	3.95	17.15	15.98	3.52	36.65
Empire West Side Irrigation District	2.01	3.87	2.52	3.73	12.13	16.64	2.73	31.50
Kern County Water Agency	9.02	8.45	5.05	5.56	28.08	20.88	5.18	54.14
Oak Flat Water District	1.99	2.20	2.03	2.58	8.80	15.22	2.54	26.56
Tulare Lake Basin Water Storage District	5.29	4.73	3.20	4.21	17.43	16.31	3.57	37.31
San Joaquin Valley Area	8.93	8.61	4.74	5.27	27.55	18.82	4.89	51.26
Central Coastal Area								
San Luis Obispo County Flood Control and Water Conservation District	142.55	61.52	16.15	52.48	272.70	42.80	44.15	359.65
Santa Barbara County Flood Control and Water Conservation District	636.46	93.35	22.77	50.45	803.03	40.59	177.35	1,020.97
Central Coastal Area	469.33	82.58	20.49	51.14	623.54	41.33	132.27	797.14
Southern California Area								
Antelope Valley-East Kern Water Agency	40.50	35.98	27.50	46.26	150.24	28.41	14.68	193.33
Castaic Lake Water Agency	39.42	38.21	19.60	19.17	116.40	18.69	13.11	148.20
Coachella Valley Water District	36.77	32.13	53.48	21.63	144.01	16.85	12.15	173.01
Crestline-Lake Arrowhead Water Agency	93.73	73.48	25.38	26.01	218.60	34.92	29.92	283.44
Desert Water Agency	40.31	35.23	51.36	24.88	151.78	18.27	13.29	183.34
Littlerock Creek Irrigation District	49.05	42.86	32.15	50.24	174.30	33.41	17.65	225.36
Mojave Water Agency	74.36	82.52	26.04	73.47	256.39	38.46	25.15	320.00
Palmdale Water District	44.96	42.79	39.78	55.65	183.18	33.14	16.50	232.82
San Bernardino Valley Municipal Water District	129.48	102.01	27.42	35.33	294.24	43.89	40.76	378.89
San Gabriel Valley Municipal Water District	89.59	72.40	36.52	27.01	225.52	32.27	28.45	286.24
San Gorgonio Pass Water Agency	213.43	171.61	22.57	47.05	454.66	49.67	64.21	568.54
The Metropolitan Water District of Southern California	77.29	56.75	35.20	21.10	190.34	31.18	24.98	246.50
Ventura County Flood Control District	105.71	77.32	26.69	40.64	250.36	43.26	34.25	327.87
Southern California Area	74.28	56.31	34.45	24.35	189.39	30.66	24.10	244.15
All Areas	45.46	33.33	19.05	15.09	112.93	24.61	15.52	153.06

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 2001 (from 132-00, Table B-22) by the total Transportation Capital (132-00, B-15) and the Capital component of the Delta Water Charge (132-00, B-4 * 11.77671248). This rate is multiplied by the equivalent rate for the Transportation Capital cost (column 1).

Table B-26

Capital 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	404,000	1,327,000
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	5,841,000	7,112,000	9,441,000	8,476,000	8,762,000	2,363,000	104,758,000	38,830,000

Table B-26

Capital 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	5,736,000	3,329,000	9,065,000	28,694,000
1989	1,130,000	0	19,641,000	0	41,463,000	1,650,000	43,113,000	62,754,000
1990	2,066,000	0	26,422,000	0	31,341,000	1,650,000	32,991,000	59,413,000
1991	4,980,000	0	28,439,000	0	29,334,000	999,000	30,333,000	58,772,000
1992	11,920,000	0	25,406,000	0	17,953,000	299,000	18,252,000	43,658,000
1993	16,303,000	0	38,348,000	0	31,076,000	0	31,076,000	69,424,000
1994	7,081,000	0	11,071,000	0	22,319,000	0	22,319,000	33,390,000
1995	5,350,000	0	7,038,000	0	5,820,000	0	5,820,000	12,858,000
1996	1,706,000	0	8,198,000	0	9,602,000	0	9,602,000	17,800,000
1997	1,905,000	0	3,636,000	0	3,458,000	0	3,458,000	7,094,000
1998	28,000	0	28,000	0	1,710,000	0	1,710,000	1,738,000
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	205,965,000	8,607,000	214,572,000	453,459,000

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	898,604	0
1992	0	0	0	0	0	0	849,240	0
1993	0	0	0	0	0	0	931,890	0
1994	0	0	0	0	0	0	1,048,625	0
1995	0	0	0	0	0	0	953,814	0
1996	0	0	0	0	0	0	1,171,411	0
1997	0	0	0	0	0	0	1,110,038	0
1998	0	0	0	0	0	0	1,213,002	0
1999	1,229	517	646	409	383	169	668,466	0
2000	0	0	0	0	0	0	1,149,708	0
2001	0	0	0	0	0	0	1,207,193	0
2002	0	0	0	0	0	0	1,455,529	0
2003	0	0	0	0	0	0	1,298,855	0
2004	0	0	0	0	0	0	1,298,855	0
2005	0	0	0	0	0	0	1,298,855	0
2006	0	0	0	0	0	0	1,298,855	0
2007	0	0	0	0	0	0	1,298,855	0
2008	0	0	0	0	0	0	1,298,855	0
2009	0	0	0	0	0	0	1,298,855	0
2010	0	0	0	0	0	0	1,298,855	0
2011	0	0	0	0	0	0	1,298,855	0
2012	0	0	0	0	0	0	1,298,855	0
2013	0	0	0	0	0	0	1,298,855	0
2014	0	0	0	0	0	0	1,298,855	0
2015	0	0	0	0	0	0	1,298,855	0
2016	0	0	0	0	0	0	1,298,855	0
2017	0	0	0	0	0	0	1,298,855	0
2018	0	0	0	0	0	0	1,298,855	0
2019	0	0	0	0	0	0	1,298,855	0
2020	0	0	0	0	0	0	1,298,855	0
2021	0	0	0	0	0	0	1,298,855	0
2022	0	0	0	0	0	0	1,298,855	0
2023	0	0	0	0	0	0	1,298,855	0
2024	0	0	0	0	0	0	1,298,855	0
2025	0	0	0	0	0	0	1,298,855	0
2026	0	0	0	0	0	0	1,298,855	0
2027	0	0	0	0	0	0	1,298,855	0
2028	0	0	0	0	0	0	1,298,855	0
2029	0	0	0	0	0	0	1,298,855	0
2030	0	0	0	0	0	0	1,298,855	0
2031	0	0	0	0	0	0	1,298,855	0
2032	0	0	0	0	0	0	1,298,855	0
2033	0	0	0	0	0	0	1,298,855	0
2034	0	0	0	0	0	0	1,298,855	0
2035	0	0	0	0	0	0	1,298,855	0
Total	1,229	517	646	409	383	169	55,519,735	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	79,117	0	977,721	0	961,897	0	961,897	1,939,618
1992	95,113	0	944,353	0	1,010,970	0	1,010,970	1,955,323
1993	107,890	0	1,039,780	0	1,409,581	0	1,409,581	2,449,361
1994	366,239	0	1,414,864	0	1,713,260	0	1,713,260	3,128,124
1995	252,612	0	1,206,426	0	1,452,549	0	1,452,549	2,658,975
1996	266,953	0	1,438,364	0	1,350,581	0	1,350,581	2,788,945
1997	679,826	0	1,789,864	0	1,528,509	0	1,528,509	3,318,373
1998	825,038	0	2,038,040	0	1,619,068	0	1,619,068	3,657,108
1999	381,892	0	1,053,711	0	956,229	0	956,229	2,009,940
2000	958,090	0	2,107,798	0	1,557,332	0	1,557,332	3,665,130
2001	1,005,994	0	2,213,187	0	1,635,198	0	1,635,198	3,848,385
2002	1,212,941	0	2,668,470	0	1,971,581	0	1,971,581	4,640,051
2003	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2004	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2005	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2006	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2007	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2008	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2009	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2010	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2011	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2012	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2013	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2014	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2015	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2016	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2017	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2018	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2019	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2020	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2021	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2022	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2023	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2024	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2025	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2026	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2027	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2028	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2029	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2030	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2031	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2032	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2033	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2034	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
2035	1,082,379	0	2,381,234	0	1,759,358	0	1,759,358	4,140,592
Total	41,950,212	0	97,473,300	0	75,225,569	0	75,225,569	172,698,869

b) Units 3 and 4 at Devil Canyon Power Plant 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	2,698,612	504,187	1,712,431	13,783	234,807	23,405,646	28,694,000
1989	155,446	7,191,331	2,454,496	1,671,088	17,419	1,697,316	49,566,904	62,754,000
1990	62,786	6,645,833	2,024,168	2,234,452	8,680	1,282,965	47,154,116	59,413,000
1991	28,686	6,680,540	2,053,416	2,168,712	4,024	1,200,807	46,635,815	58,772,000
1992	2,911	5,157,334	1,753,083	1,359,335	471	734,918	34,649,948	43,658,000
1993	1,205	8,379,626	3,241,298	2,722,156	212	1,272,117	53,807,386	69,424,000
1994	273	4,130,160	1,665,568	478,543	27	913,643	26,201,786	33,390,000
1995	0	1,592,834	621,871	206,978	0	238,246	10,198,071	12,858,000
1996	0	2,078,783	668,001	606,205	0	393,064	14,053,947	17,800,000
1997	0	862,719	331,422	205,796	0	141,556	5,552,507	7,094,000
1998	0	217,995	93,515	0	0	70,000	1,356,490	1,738,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	660,604	51,579,403	16,398,729	18,184,774	121,366	8,431,316	358,082,808	453,459,000

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	15,804	1,233,936	392,307	435,035	2,903	0	8,566,425	10,646,410
1989	16,591	1,295,394	411,847	456,703	3,048	0	8,993,093	11,176,676
1990	16,600	1,296,129	412,080	456,962	3,050	0	8,998,192	11,183,013
1991	16,600	1,296,146	412,086	456,968	3,050	0	8,998,313	11,183,163
1992	33,241	2,595,449	825,176	915,049	6,107	0	18,018,542	22,393,564
1993	34,633	2,704,140	859,732	953,368	6,363	0	18,773,115	23,331,351
1994	34,353	2,682,273	852,780	945,659	6,311	0	18,621,304	23,142,680
1995	34,289	2,677,296	851,197	943,904	6,300	0	18,586,753	23,099,739
1996	34,457	2,690,397	855,362	948,523	6,331	0	18,677,704	23,212,774
1997	36,116	2,819,945	896,550	994,197	6,635	0	19,577,079	24,330,522
1998	36,894	2,880,655	915,852	1,015,600	6,778	0	19,998,548	24,854,327
1999	38,707	3,022,244	960,867	1,065,519	7,111	0	20,981,511	26,075,959
2000	62,395	4,871,725	1,548,876	1,717,570	11,463	0	33,821,270	42,033,299
2001	62,369	4,869,725	1,548,240	1,716,865	11,459	0	33,807,386	42,016,044
2002	61,968	4,838,436	1,538,292	1,705,833	11,385	0	33,590,169	41,746,083
2003	61,901	4,833,192	1,536,625	1,703,984	11,373	0	33,553,759	41,700,834
2004	59,773	4,667,038	1,483,799	1,645,405	10,982	0	32,400,259	40,267,256
2005	59,740	4,664,455	1,482,978	1,644,495	10,976	0	32,382,327	40,244,971
2006	60,653	4,735,776	1,505,653	1,669,640	11,143	0	32,877,464	40,860,329
2007	60,701	4,739,468	1,506,827	1,670,941	11,152	0	32,903,097	40,892,186
2008	59,347	4,633,755	1,473,217	1,633,671	10,903	0	32,169,195	39,980,088
2009	59,428	4,640,058	1,475,222	1,635,894	10,918	0	32,212,959	40,034,479
2010	59,533	4,648,297	1,477,841	1,638,798	10,938	0	32,270,158	40,105,565
2011	59,831	4,671,582	1,485,244	1,647,008	10,992	0	32,431,807	40,306,464
2012	59,921	4,678,587	1,487,471	1,649,477	11,009	0	32,480,438	40,366,903
2013	59,950	4,680,861	1,488,194	1,650,279	11,014	0	32,496,222	40,386,520
2014	59,117	4,615,813	1,467,513	1,627,346	10,861	0	32,044,634	39,825,284
2015	59,811	4,669,995	1,484,740	1,646,448	10,989	0	32,420,790	40,292,773
2016	59,871	4,674,716	1,486,240	1,648,113	11,000	0	32,453,565	40,333,505
2017	60,297	4,707,949	1,496,806	1,659,829	11,078	0	32,684,278	40,620,237
2018	60,393	4,715,407	1,499,177	1,662,459	11,096	0	32,736,057	40,684,589
2019	60,324	4,710,088	1,497,486	1,660,583	11,083	0	32,699,131	40,638,695
2020	60,441	4,719,206	1,500,385	1,663,798	11,104	0	32,762,428	40,717,362
2021	61,400	4,794,060	1,524,184	1,690,188	11,281	0	33,282,089	41,363,202
2022	61,690	4,816,736	1,531,393	1,698,183	11,334	0	33,439,516	41,558,852
2023	51,306	4,005,938	1,273,615	1,412,329	9,426	0	27,810,663	34,563,277
2024	51,532	4,023,587	1,279,226	1,418,551	9,468	0	27,933,191	34,715,555
2025	41,864	3,268,722	1,039,230	1,152,417	7,691	0	22,692,645	28,202,569
2026	21,064	1,644,677	522,895	579,845	3,870	0	11,417,940	14,190,291
2027	16,337	1,275,555	405,539	449,708	3,001	0	8,855,365	11,005,505
2028	14,052	1,097,168	348,825	386,816	2,582	0	7,616,937	9,466,380
2029	14,118	1,102,322	350,463	388,633	2,594	0	7,652,718	9,510,848
2030	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0
Total	1,949,412	152,208,898	48,392,032	53,662,593	358,152	0	1,056,689,036	1,313,260,123

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	221,120	63,317	81,473	0	39,376	1,534,332	1,939,618
1992	0	224,333	66,275	76,998	0	41,385	1,546,332	1,955,323
1993	0	284,262	89,078	84,491	0	57,702	1,933,828	2,449,361
1994	0	366,857	118,397	95,075	0	70,133	2,477,662	3,128,124
1995	0	310,209	98,268	86,479	0	59,461	2,104,558	2,658,975
1996	0	321,145	95,317	106,208	0	55,287	2,210,988	2,788,945
1997	0	389,636	123,446	100,643	0	62,571	2,642,077	3,318,373
1998	0	429,772	135,927	109,979	0	66,278	2,915,152	3,657,108
1999	37	235,969	75,026	60,907	11	39,144	1,598,846	2,009,940
2000	0	432,531	138,193	104,240	0	63,750	2,926,416	3,665,130
2001	0	454,157	145,102	109,452	0	66,938	3,072,736	3,848,385
2002	0	547,584	174,952	131,968	0	80,708	3,704,839	4,640,051
2003	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2004	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2005	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2006	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2007	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2008	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2009	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2010	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2011	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2012	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2013	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2014	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2015	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2016	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2017	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2018	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2019	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2020	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2021	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2022	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2023	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2024	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2025	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2026	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2027	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2028	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2029	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2030	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2031	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2032	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2033	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2034	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2035	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
Total	37	20,342,728	6,475,258	5,034,092	11	3,079,426	137,767,317	172,698,869

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	15,804	1,233,936	392,307	435,035	2,903	0	8,566,425	10,646,410
1989	16,591	1,295,394	411,847	456,703	3,048	0	8,993,093	11,176,676
1990	16,600	1,296,129	412,080	456,962	3,050	0	8,998,192	11,183,013
1991	16,600	1,517,266	475,403	538,441	3,050	39,376	10,532,645	13,122,781
1992	33,241	2,819,782	891,450	992,046	6,107	41,385	19,564,876	24,348,887
1993	34,633	2,988,402	948,810	1,037,860	6,363	57,702	20,706,942	25,780,712
1994	34,353	3,049,130	971,177	1,040,734	6,311	70,133	21,098,966	26,270,804
1995	34,289	2,987,505	949,466	1,030,383	6,300	59,461	20,691,310	25,758,714
1996	34,457	3,011,542	950,680	1,054,731	6,331	55,287	20,888,691	26,001,719
1997	36,116	3,209,582	1,019,996	1,094,840	6,635	62,571	22,219,155	27,648,895
1998	36,894	3,310,427	1,051,779	1,125,579	6,778	66,278	22,913,700	28,511,435
1999	38,744	3,258,214	1,035,894	1,126,426	7,122	39,144	22,580,355	28,085,899
2000	62,395	5,304,256	1,687,068	1,821,810	11,463	63,750	36,747,687	45,698,429
2001	62,369	5,323,882	1,693,342	1,826,317	11,459	66,938	36,880,122	45,864,429
2002	61,968	5,386,020	1,713,244	1,837,801	11,385	80,708	37,295,008	46,386,134
2003	61,901	5,321,833	1,692,745	1,821,747	11,373	72,021	36,859,806	45,841,426
2004	59,773	5,155,679	1,639,919	1,763,168	10,982	72,021	35,706,306	44,407,848
2005	59,740	5,153,096	1,639,098	1,762,258	10,976	72,021	35,688,374	44,385,563
2006	60,653	5,224,417	1,661,773	1,787,403	11,143	72,021	36,183,511	45,000,921
2007	60,701	5,228,109	1,662,947	1,788,704	11,152	72,021	36,209,144	45,032,778
2008	59,347	5,122,396	1,629,337	1,751,434	10,903	72,021	35,475,242	44,120,680
2009	59,428	5,128,700	1,631,341	1,753,657	10,918	72,021	35,519,006	44,175,071
2010	59,533	5,136,939	1,633,961	1,756,561	10,938	72,021	35,576,204	44,246,157
2011	59,831	5,160,223	1,641,364	1,764,770	10,992	72,021	35,737,855	44,447,056
2012	59,921	5,167,228	1,643,591	1,767,240	11,009	72,021	35,786,485	44,507,495
2013	59,950	5,169,502	1,644,314	1,768,042	11,014	72,021	35,802,269	44,527,112
2014	59,117	5,104,454	1,623,633	1,745,108	10,861	72,021	35,350,682	43,965,876
2015	59,811	5,158,636	1,640,859	1,764,211	10,989	72,021	35,726,838	44,433,365
2016	59,871	5,163,357	1,642,360	1,765,875	11,000	72,021	35,759,613	44,474,097
2017	60,297	5,196,590	1,652,926	1,777,592	11,078	72,021	35,990,325	44,760,829
2018	60,393	5,204,048	1,655,297	1,780,221	11,096	72,021	36,042,105	44,825,181
2019	60,324	5,198,729	1,653,606	1,778,346	11,083	72,021	36,005,178	44,779,287
2020	60,441	5,207,847	1,656,505	1,781,561	11,104	72,021	36,068,475	44,857,954
2021	61,400	5,282,701	1,680,303	1,807,951	11,281	72,021	36,588,137	45,503,794
2022	61,690	5,305,377	1,687,513	1,815,946	11,334	72,021	36,745,563	45,699,444
2023	51,306	4,494,579	1,429,734	1,530,092	9,426	72,021	31,116,711	38,703,869
2024	51,532	4,512,228	1,435,346	1,536,314	9,468	72,021	31,239,238	38,856,147
2025	41,864	3,757,363	1,195,350	1,270,180	7,691	72,021	25,998,692	32,343,161
2026	21,064	2,133,318	679,015	697,608	3,870	72,021	14,723,987	18,330,883
2027	16,337	1,764,196	561,659	567,471	3,001	72,021	12,161,412	15,146,097
2028	14,052	1,585,809	504,944	504,579	2,582	72,021	10,922,985	13,606,972
2029	14,118	1,590,963	506,583	506,396	2,594	72,021	10,958,765	13,651,440
2030	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2031	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2032	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2033	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2034	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
2035	0	488,641	156,120	117,763	0	72,021	3,306,047	4,140,592
Total	1,949,449	172,551,630	54,867,286	58,696,681	358,163	3,079,426	1,194,456,357	1,485,958,992

Conversion Factors

Quantity	To convert from customary unit	To metric unit	Multiply customary unit by	To convert to customary unit, multiply metric unit by
Length	inches (in)	millimeters (mm)●	25.4	0.03937
	inches (in)	centimeters (cm)	2.54	0.3937
	feet (ft)	meters (m)	0.3048	3.2808
	miles (mi)	kilometers (km)	1.6093	0.62139
Area	square inches (in^2)	square millimeters (mm^2)	645.16	0.00155
	square feet (ft^2)	square meters (m^2)	0.092903	10.764
	acres (ac)	hectares (ha)	0.40469	2.4710
	square miles (mi^2)	square kilometers (km^2)	2.590	0.3861
Volume	gallons (gal)	liters (L)	3.7854	0.26417
	million gallons (10^6 gal)	megaliters (ML)	3.7854	0.26417
	cubic feet (ft^3)	cubic meters (m^3)	0.028317	35.315
	cubic yards (yd^3)	cubic meters (m^3)	0.76455	1.308
	acre-feet (ac-ft)	thousand cubic meters ($m^3 \times 10^3$)	1.2335	0.8107
	acre-feet (ac-ft)	hectare-meters (ha - m)■	0.1234	8.107
	thousand acre-feet (taf)	million cubic meters ($m^3 \times 10^6$)	1.2335	0.8107
	thousand acre-feet (taf)	hectare-meters (ha - m)■	123.35	0.008107
	million acre-feet (maf)	billion cubic meters ($m^3 \times 10^9$)◆	1.2335	0.8107
	million acre-feet (maf)	cubic kilometers (km^3)	1.2335	0.8107
Flow	cubic feet per second (ft^3/s)	cubic meters per second (m^3/s)	0.028317	35.315
	gallons per minute (gal/min)	liters per minute (L/min)	3.7854	0.26417
	gallons per day (gal/day)	liters per day (L/day)	3.7854	0.26417
	million gallons per day (mgd)	megaliters per day (ML/day)	3.7854	0.26417
	acre-feet per day (ac-ft/day)	thousand cubic meters per day ($m^3 \times 10^3$/day)	1.2335	0.8107
Mass	pounds (lb)	kilograms (kg)	0.45359	2.2046
	tons (short, 2,000 lb)	megagrams (Mg)	0.90718	1.1023
Velocity	feet per second (ft/s)	meters per second (m/s)	0.3048	3.2808
Power	horsepower (hp)	kilowatts (kW)	0.746	1.3405
Pressure	pounds per square inch (psi)	kilopascals (kPa)	6.8948	0.14505
	head of water in feet	kilopascals (kPa)	2.989	0.33456
Specific capacity	gallons per minute per foot of drawdown	liters per minute per meter of drawdown	12.419	0.08052
Concentration	parts per million (ppm)	milligrams per liter (mg/L)	1.0	1.0
Electrical conductivity	micromhos per centimeter	microsiemens per centimeter (mS/cm)	1.0	1.0
Temperature	degrees Fahrenheit (˚F)	degrees Celsius (˚C)	(˚F - 32)/1.8	(1.8 x ˚C) + 32

● When using "dual units," inches are normally converted to millimeters (rather than centimeters).

■ Not used often in metric countries, but is offered as a conceptual equivalent of customary western U.S. practice (a standard depth of water over a given area of land).

◆ ASTM Manual E380 discourages the use of billion cubic meters since that magnitude is represented by giga (a thousand million) in other countries. It is shown here for potential use for quantifying large reservoir volumes (similar to million acre-feet).

Other Common Conversion Factors

1 cubic foot=7.48 gallons=62.4 pounds of water

1 cubic foot per second (cfs)=450 gallons per minute (gpm)

1 cfs=646,320 gallons a day=1.98 ac-ft a day

1 acre-foot=325,900 gallons=43,560 cubic feet

1 million gallons=3.07 acre-feet

1 million gallons a day (mgd)=1,120 ac-ft a year