BULLETIN 132 - 98
November 1999

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

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Management of the California State Water Project

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Foreword

Bulletin 132-98 is a transitional bulletin that covers the period from October 1, 1996 through December 31, 1997. Thereafter, Bulletin 132 will cover the calendar year only. We hope this change will make the bulletin easier to use. Consistent with past reports, Bulletin 132-98 is a snapshot of conditions and status of programs that existed as of the end of 1997. Subsequent changes will be reflected in future bulletins as well as our reguar updates in other forums on detailed programs. There has also been a slight reorganization of the Bulletin. The chapters concerning planning and design have been combined and moved closer to the water storage chapter.

Bulletin 132-63 began the annual series, *Management of the California State Water Project*. Bulletin 132-98 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 1999. Appendix B was previously published as an individual document.

The Bulletin discusses significant SWP events and issues affecting SWP management and operations. Some items may be discussed again because of the overlap in departmental programs' reporting cycle.

Bulletin 132-98 also discusses the New Year's floods of December 1996 and January 1997; water supply and delivery; final construction details and beginning operations of the Coastal Branch, Phase II; plans for the East Branch Extension; the tunnel intake reconstruction project at Silverwood Lake; reorganization of the divisions of Planning and Local Assistance; amendments to water contracts; and Delta planning and activities.

Thomas M. Hannigan
Director

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Department of Water Resources

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(Note: Vacancies pending appointments by the Governor)

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The California Water Commission serves as a policy advisory body to the Director of Water Resources on all California water resources matters. The 9-member citizen commission provides a water resources forum for the people of the State, acts as a liaison between the legislative and executive branches of State Government, and coordinates federal, State, and local water resources efforts.

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Abbreviations and Acronyms

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A

AB Assembly Bill

ACWD Alameda County Water District *

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

ADA Americans with Disabilities Act

AVEKWA Antelope Valley-East Kern Water Agency *

B

BDAC Bay-Delta Advisory Council

BMWD Berrenda Mesa Water District

C

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

CCWA Central Coast Water Authority or Contra Costa Water Agency

CCWD Contra Costa Water District

CD Conservation District

CEA Capacity Exchange Agreement

CEQA California Environmental Quality Act

CESA California Endangered Species Act

cfs cubic feet per second

CIMIS California irrigation management information system

City of Yuba City *

CLAWA Crestline-Lake Arrowhead Water Agency *

CLWA Castaic Lake Water Agency *

COA Coordinated Operation Agreement

County of Butte *

County of Kings *

Corps U.S. Army Corps of Engineers

CVC Cross Valley Canal

CVHJV Central Valley Habitat Joint Venture

CVP Central Valley Project

CVPIA Central Valley Project Improvement Act

CVRWQCB Central Valley Regional Water Quality Control Board

CVWD Coachella Valley Water District *

D

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

DCVCWLNG Direct Cross Valley Canal Wheeling

DEIR draft environmental impact report

DFG California Department of Fish and Game

DOE Department of Energy or Division of Engineering

DOI Department of the Interior or Delta Outflow Index

DRWD Dudley Ridge Water District *

DSOD Division of Safety of Dams

DWA Desert Water Agency *

DWR California Department of Water Resources

E

EA/IS Environmental Assessment/Initial Study

ECCID East Contra Costa Irrigation District

EIR environmental impact report

EIS environmental impact statement

EPA U.S. Environmental Protection Agency

ESO Environmental Services Office

EWSID Empire West Side Irrigation District *

F

FERC Federal Energy Regulatory Commission

FLIMS Field and Laboratory Information Management System

H

HMP Hazard Mitigation Plan

I

INDP Interim North Delta Plan

ISDP Interim South Delta Program

ISO California Independent System Operator Corporation

K

KCWA Kern County Water Agency *

KWB Kern Water Bank

kWh kilowatt hour

L

LADWP Los Angeles Department of Water and Power

LCID Littlerock Creek Irrigation District *

LHWD Lost Hills Water District

LTRID Lower Tule River Irrigation District

M

MCL maximum contaminant level

mg/L milligrams per liter

MTBE methyl tertiary butyl ether

MW megawatt

MWA Mojave Water Agency *

MWD Metropolitan Water District of Southern California *

MWQI Municipal Water Quality Investigations

N

NCFCWCD Napa County Flood Control and Water Conservation District *

NDOI Net Delta Outflow Index

NEPA National Environmental Policy Act

NMFS National Marine Fisheries Service

NPC Nevada Power Company

NPDES national pollutant discharge elimination system

O

OFWD Oak Flat Water District *

O&M Division of Operations and Maintenance

OM&P Operations, maintenance, and power

OMP&R Operations, maintenance, power, and replacement

OM&R Operations, maintenance, and replacement

P

PCFCWCD Plumas County Flood Control and Water Conservation District *

PCL Planning and Conservation League

PG&E Pacific Gas and Electric Company

pH [p(otential) of H(ydrogen]

PID Pixley Irrigation District

ppt parts per thousand

PSA Public Service Announcement

PWD Palmdale Water District *

PX California Power Exchange Corporation

Q

QA/QC Quality Assurance/Quality Control

R

RD reclamation district

S

SB Senate Bill

SBCFCWCD Santa Barbara County Flood Control and Water Conservation District *

SBVMWD San Bernardino Valley Municipal Water District *

SCE Southern California Edison

SCVWD Santa Clara Valley Water District *

SCWA Solano County Water Agency *

SDTBP South Delta Temporary Barriers Project

SDWA South Delta Water Agency

SEW Suisun Ecological Workgroup

SGPWA San Gorgonio Pass Water Agency *

SGVMWD San Gabriel Valley Municipal Water District *

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

SMPA Suisun Marsh Preservation Agreement

SMSCG Suisun Marsh Salinity Control Gates

SRB State Reclamation Board

SRCD Suisun Resource Conservation District

SVUR Sacramento Valley Unimpaired Runoff

SWP State Water Project

SWRCB State Water Resources Control Board

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

VCFCD Ventura County Flood Control District *

W

WQA water quality assessment

WQCP water quality control plan

WR 95-6 SWRCB Order Water Right 95-6

WWD Westlands Water District

WSCC Western Systems Coordinating Council

Y

YCWA Yuba County Water Agency

* State Water Contractor

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Introduction

The State Water Project

Bidwell Bar Bridge under construction along the Middle Fork Feather River on a foggy day (1965)

California's diverse climate and geography range from desert to alpine to subtropical. It contains both the highest and lowest elevations in the coterminous United States—within 85 miles of each other. In a typical year, some areas receive as little as 2 inches of rain while others receive more than 100 inches. These contrasts complicate the water needs and supplies—perhaps the most vital resource of any land.

Regardless of the amount of rainfall, people settled in all areas of the State. Since the earliest settlers, Californians have 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 bring water from the Sierra Nevada.

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. The first water was delivered in 1962 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 19 million of California's estimated 33 million residents benefit from water from the SWP. SWP water irrigates about 600,000 acres of farmland, mainly in the south San Joaquin Valley.

Water Delivery Facilities

The SWP depends on a complex system of dams, reservoirs, powerplants, pumping plants, canals, and aqueducts to deliver water. Although initial transportation facilities were essentially completed in 1973, other facilities have been built since, and still others are under construction or are scheduled to be built as needed (Figure I-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 4,103,651 acre-feet of entitlement water by 1997 through SWP facilities, gradually increasing to a maximum of 4,172,686 acre-feet by 2020. Actual demand, however, has not developed as projected, owing to circumstances, which have changed since the long-term water contracts were signed in the 1960s. Thee changes include slower population growth, changes in local use, local water conservation programs, and conjunctive-use programs. The most SWP entitlement water delivered to date in any year was about 2.8 million acre-feet in 1989. Nevertheless, demands for SWP water are expected to increase as the population of California continues to increase.

Figure I-1
Names and Locations of Primary Water Delivery Facilities
Current and Projected, December 31, 1997

Project Design

The water stored and delivered by the SWP conservation and transportation facilities originates from rainfall and snowmelt runoff in Northern and Central California watersheds, where most of the State's precipitation occurs. Agencies or districts in the Southern California, Central Coastal, San Joaquin Valley, South Bay, North Bay, and Upper Feather River areas receive water from the SWP.

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

From the northern Delta, Barker Slough Pumping Plant diverts water for delivery to Napa and Solano counties through the North Bay Aqueduct, completed in 1988. Near Byron, in the southern Delta, the SWP diverts water into Clifton Court Forebay for delivery south of the Delta. The Banks Pumping Plant lifts water from Clifton Court Forebay into Bethany Reservoir; from Bethany Reservoir, the South Bay Pumping Plant lifts water into the South Bay Aqueduct, supplying 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. The San Luis Reservoir is jointly owned by the Department and the U.S. Bureau of Reclamation, which operates the CVP. San Luis Reservoir has a storage capacity of more than 2 million acre-feet; 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 the late fall through early spring months of the year and temporarily stored for release back to the California Aqueduct to meet summertime peaking demands by SWP and CVP contractors.

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

As the water flows through the San Joaquin Valley, it is lifted over 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, the Coastal Branch Aqueduct serves agricultural areas west of the California Aqueduct. This branch was extended to serve municipal and industrial water users in San Luis Obispo and Santa Barbara counties beginning in August 1997.

The remaining water conveyed by the California Aqueduct is delivered to Southern California, where about two-thirds of California's population live. Before that water can be delivered, it must

first cross the Tehachapi Mountains. Pumps at Edmonston Pumping Plant, situated at the foot of the mountains, raise the water 1,926 feet—the highest single lift of any pumping plant in the world. Then the water enters 8.5 miles of tunnels and siphons as it flows into the Antelope Valley, where the California Aqueduct divides into two branches, the East Branch and the West Branch.

The East Branch of the California Aqueduct carries water through the Antelope Valley into Silverwood Lake in the San Bernardino Mountains. From Silverwood Lake, the water flows through the San Bernardino Tunnel into the Devil Canyon Powerplant. The water continues down the East Branch to Lake Perris, the southernmost SWP reservoir, which is also the project's most popular recreation destination.

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

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

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

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

Table I-1
Physical Characteristics of Primary Storage Facilities

Facility	*Gross Capacity (Acre-feet)*	*Surface Area (Acres)*	*Shoreline (Miles)*
Antelope Lake	22,600	930	15
Frenchman Lake	55,500	1,580	21
Lake Davis	84,400	4,030	32
Lake Oroville	3,537,600	15,800	167
Thermalito Forebay	11,800	630	10
Thermalito Afterbay	57,000	4,300	26
Thermalito Diversion Pool	13,400	320	10
Clifton Court Forebay	31,300	2,180	8
Bethany Reservoir	5,100	180	6
Lake Del Valle	77,100	1,060	16
San Luis Reservoir	2,027,800	12,520	65
SWP storage, 1,062,183 AF			
O'Neill Forebay	56,400	2,700	12
SWP storage, 29,500 AF			
Los Banos Reservoir	34,600	620	12
Quail Lake	7,600	290	3
Pyramid Lake	171,200	1,300	21
Elderberry Forebay	32,500	500	7
Castaic Lake	323,700	2,240	29
Silverwood Lake	75,000	980	13
Lake Perris	131,500	2,320	10

Additional Construction

The initial aqueduct facilities of the SWP were designed and constructed to provide service to all agencies that would 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. Increased costs, unrealized population growth, and increased non-SWP demands for limited water supplies delayed the construction schedule for some planned additional facilities.

Table I-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 I-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] P-g indicates pumping-generating units.
[b] These plants have one unit in reserve.

Table I-4
Powerplant Characteristics, by Type and Facility

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

[a] 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 I-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 [a]	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**

[a] Last section of pipe was laid on 4/28/97; Coastal Branch, Phase II, began operation on August 11, 1997.

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

In the mid-1980s, the Department began planning the offstream storage complex, Los Banos Grandes, in Merced County. Initial planning for Los Banos Grandes was completed. However, because of environmental concerns about the Sacramento-San Joaquin Delta and its effect on water management, along with concerns about how best to transfer water across the Delta, additional planning for Los Banos Grandes has been suspended until those concerns have been addressed. The Department also developed alternative methods of storing water, including the Kern Water Bank, a conjunctive-use groundwater storage facility located in Kern County.

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

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

Methods of Financing

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

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

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

Long-Term Contracting Agencies

From 1963 through 1967, 32 agencies or districts signed long-term water supply contracts with the Department. However, in 1965, the City of West Covina was annexed to the Metropolitan Water District of Southern California, and in 1981 Hacienda Water District was assigned to Tulare Lake Basin Water Storage District. On January 1, 1992, Castaic Lake Water Agency assumed all rights and obligations granted to Devil's Den Water District according to its long-term supply contract. The 29 agencies or districts that now have long-term contracts with the Department are listed in Figure I-2 and Table I-6.

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

Figure I-2
Names, Locations, and First Year of Service of
Long-Term Contracting Agencies, December 31, 1997

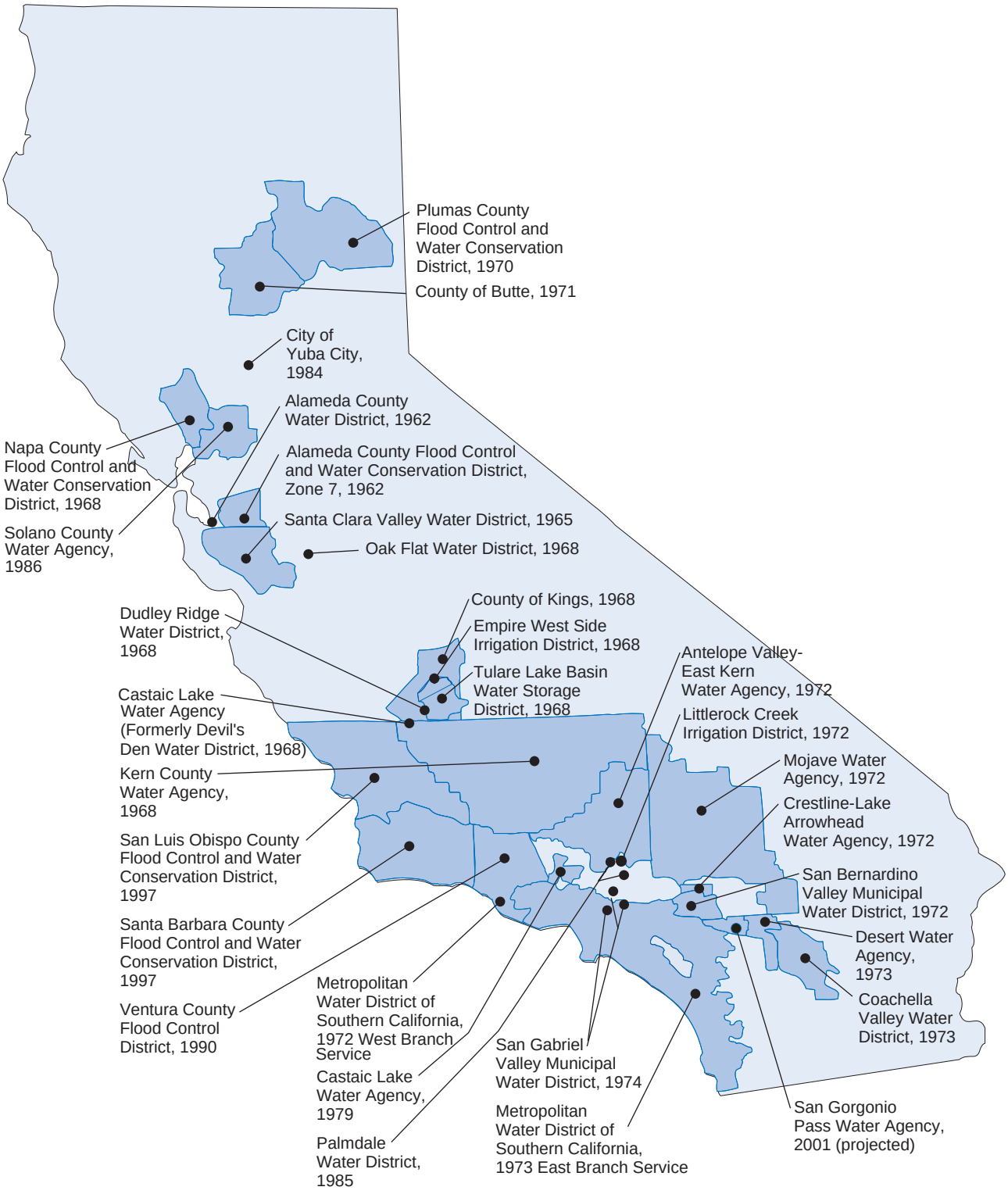


Table I-6
Long-Term Water Supply Contracting Agencies, by Area, as of December 31, 1997

Contracting Agency	Cumulative Deliveries through December 31, 1997 (Acre-Feet) [a]	Maximum Annual Entitlement (Acre-Feet)	Payments through December 31, 1997 (Dollars)	Gross Area as of December 31, 1997 (Acres)	Assessed Valuation 1997 (Dollars) [b]	Estimated Population December 31, 1997
Upper Feather River Area						
City of Yuba City	7,209	9,600	1,777,010	5,107	1,126,662,000	34,350
County of Butte	8,073	27,500	481,858	1,069,000	6,239,500,000	172,600
Plumas County Flood Control and Water Conservation District	10,472	2,700	957,156	1,676,056 [c]	2,060,744,324 [c]	21,200
Subtotal	*25,754*	*39,800*	*3,216,024*	*2,750,163*	*9,426,906,342*	*228,150*
North Bay Area						
Napa County Flood Control and Water Conservation District	160,549	25,000	37,492,410	510,010	10,428,205,783	123,340
Solano County Water Agency	250,165	42,000	45,853,873	537,600	18,889,456,381	377,560
Subtotal	*410,714*	*67,000*	*83,346,283*	*1,047,610*	*29,317,662,164*	*500,900*
South Bay Area						
Alameda County Flood Control and Water Conservation District-Zone 7	676,854	46,000	51,274,834	272,000	12,592,234,275	161,600
Alameda County Water District	723,828	42,000	55,508,824	64,640	24,333,736,000	302,450
Santa Clara Valley Water District	2,700,933	100,000	178,351,255	849,000	115,100,000,000	1,653,000
Subtotal	*4,101,615*	*188,000*	*285,134,913*	*1,185,640*	*152,025,970,275*	*2,117,050*
San Joaquin Valley Area						
County of Kings	67,822	4,000	2,517,135	893,300	3,953,722,580	118,204
Castaic Lake Water Agency	419,011			8,700	4,300,000	0
Dudley Ridge Water District	1,518,423	53,370	41,014,587	37,568	35,000,000	36
Empire West Side Irrigation District	88,875	3,000	2,186,309	7,400	[d]	50
Kern County Water Agency	23,270,407	1,112,730	956,272,771	5,161,000	36,509,755,659	603,300
Oak Flat Water District	152,530	5,700	3,309,589	4,500	[d]	10
Tulare Lake Basin Water Storage District	3,321,294	118,500	82,253,301	189,519	152,288,305	120
Subtotal	*28,838,362*	*1,297,300*	*1,087,553,692*	*6,301,987*	*40,655,066,544*	*721,720*
Central Coastal Area						
San Luis Obispo County Flood Control and Water Conservation District	1,199	25,000	24,205,993	2,131,300	15,442,814	239,000
Santa Barbara County Flood Control and Water Conservation District	8,679	45,486	74,492,735	1,775,296	11,589,517,056	405,502
Subtotal	*9,878*	*70,486*	*98,698,728*	*3,906,596*	*11,604,959,870*	*644,502*
Southern California Area						
Antelope Valley-East Kern Water Agency	978,645	138,400	213,447,226	1,525,029	11,632,598,377	250,000
Castaic Lake Water Agency [e]	225,128	54,200	100,324,405	133,700	12,073,683,645	184,700
Coachella Valley Water District	449,629	23,100	90,866,515	637,600	11,132,616,000	200,000
Crestline-Lake Arrowhead Water Agency	32,037	5,800	13,365,241	55,100	1,500,527,807	25,000
Desert Water Agency	685,796	38,100	123,896,934	208,800	4,335,885,000	62,000
Littlerock Creek Irrigation District	13,247	2,300	3,685,313	10,000	106,085,538	2,900
Metropolitan Water District of Southern California	15,835,110	2,011,500	4,439,973,131	3,307,443 [f]	932,639,836,223 [f]	16,400,000 [f]
Mojave Water Agency	145,624	50,800	91,828,461	3,160,400	13,123,135,905	323,443
Palmdale Water District	83,804	17,300	28,820,578	73,900	1,956,651,000	90,000
San Bernardino Valley Municipal Water District	296,857	102,600	231,075,142	210,000	14,907,805,419	600,000
San Gabriel Valley Municipal Water District	208,451	28,800	72,277,681	18,081	8,825,456,341	210,000
San Gorgonio Pass Water Agency	0	17,300	33,321,822	140,600	1,945,425,320	44,600
Ventura County Flood Control District	7,674	20,000	27,289,757	308,252	759,837,301,346	457,000
Subtotal	*18,962,002*	*2,510,200*	*5,470,172,206*	*9,788,905*	*1,774,016,998,921*	*18,849,643*
Total, State Water Project	**52,348,325**	**4,172,786**	**7,028,121,846**	**24,980,901 [g]**	**2,017,047,564,116 [g]**	**23,061,965 [g]**

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

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

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

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

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

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

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

Chapter 1
Executive Summary

Close-up view at Lake Oroville Spillway
(1969)

The unusual 1996-97 water year began with a dry fall, moved into an extremely wet December, and produced near record-breaking floods in late December 1996 and early January 1997. After the flood events, hydrology conditions became very dry. These extremely dry conditions began in late January and continued through April. After April and through the summer, precipitation is normally low and has little benefit to State Water Project operations. These dry conditions throughout the State in 1997 caused SWP contractors to depend even more on project supplies to meet their local needs.

A combination of rain and snow from late autumn through spring provides the water supplies in Northern California and particularly the Feather and Sacramento river basins. These water basins provide the primary water supplies for the State Water Project and the federal Central Valley Project. Normally, precipitation falling as snow in the Sierras is retained as snowpack and allows a consistent pattern of runoff that supplies water to the State Water Project and its contractors throughout the year.

Water Conditions, Supplies, and State Water Project Operations

Water year 1996-97 was distinctly different and produced warm, wet storms in December and January instead of snowpack. Massive amounts of water flowing into Lake Oroville could not be retained in the reservoir for later use but continued through the river system and to the Pacific Ocean. This situation is shown by the unprecedented jump in the December 1996 and January 1997 unimpaired runoff in Figure 1-1. The Sierra snowpack runoff pattern is shown as 50-year annual average data.

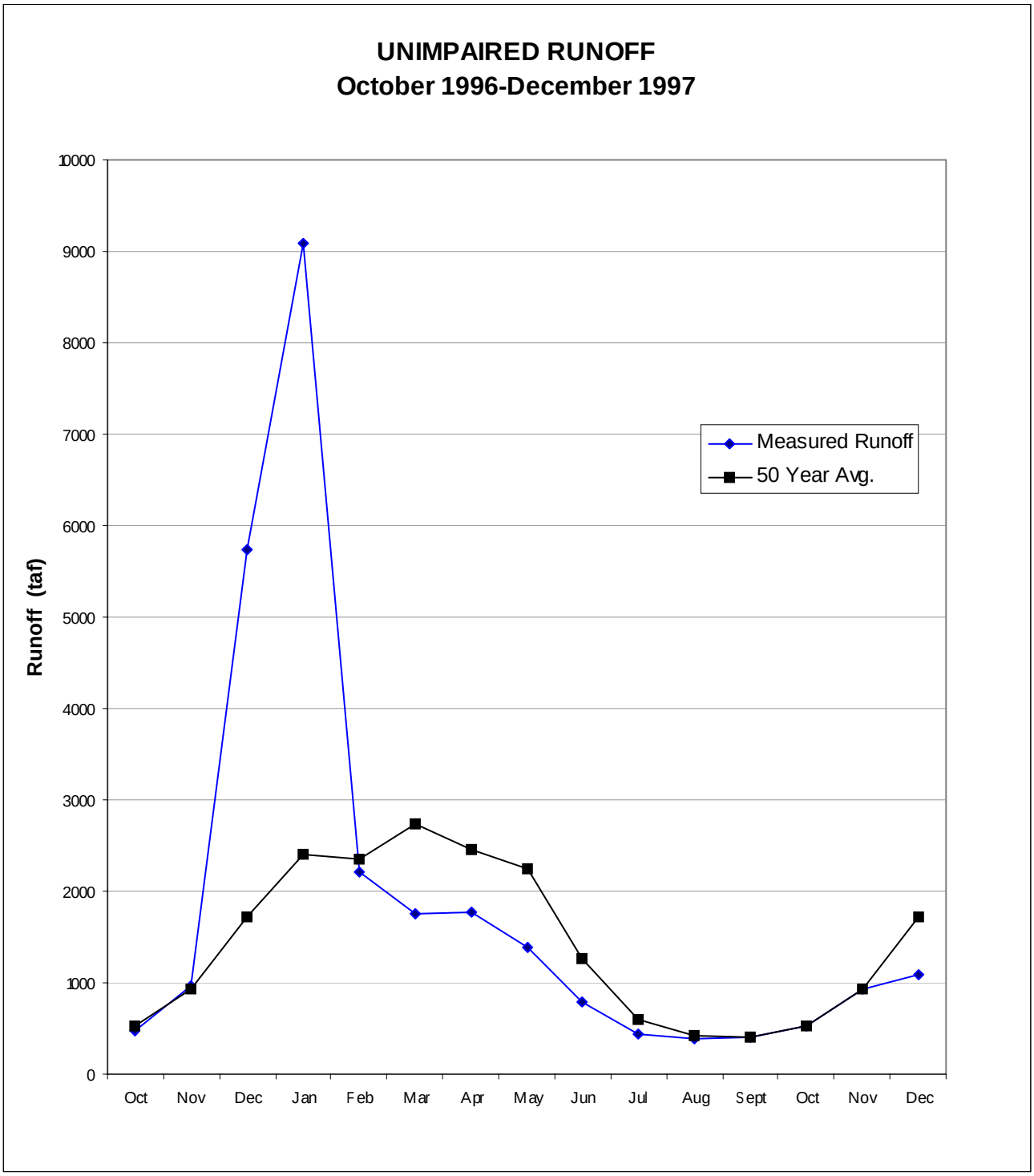
The 1996-97 water year began well. The previous wet water year of 1995-96 had left above-average reservoir storage in the SWP. On October 31, 1996, total storage in Oroville and San Luis (the SWP water conservation reservoirs) was about 4.1 million acre-feet. In October, northern Sierra precipitation and runoff was only about three-quarters the monthly average.

Extremely wet conditions prevailed in December 1996. A heavy snowfall in early December produced snow at low elevations. Several wet storms with high snow levels in early December turned low snowpack into runoff and caused Lake Oroville inflows to increase and forced lake storage almost 100,000 acre-feet into flood reservation space. River flow increased and the first spill of the season occurred from December 11 through December 16, 1996.

Then, on December 26, a warm, wet storm began dumping excessive amounts of water on Northern California. Torrential rains from December 26 to January 2 produced about 40 percent of an average year's total precipitation at high elevations. Runoff during December was about three times the average.

In fact, more than 12 inches of precipitation fell in the northern Sierra during December—150 percent of an average month and about 25 percent of an average year. December in the northern Sierra was the second wettest of record, surpassed only by December 1955.

Figure 1-1
Sacramento River Runoff Comparison for 1997 and Annual Average



By December 31, precipitation in the northern Sierra was up to 28.7 inches—more than twice the average amount. Snow accumulation at higher elevations was also above normal.

By January 1, 1997, due to unprecedented flows, reservoir storage—at record levels—began to encroach SWP flood-control space. The huge runoff amount exceeded the flood control capacity of several SWP reservoirs and resulted in spills of excess water. The overall SWP flood-control system worked quite well, but two major levees broke and floods occurred along many rivers that were not part of the SWP.

The December rains that created record flood flows on major rivers throughout California aided water supply conditions. Reservoir storage on January 1 was higher than normal, and runoff during January measured 400 percent of average.

The storms caused extremely high inflows to Lake Oroville. On January 1, 1997, a record 302,000 cfs raised Oroville storage into flood control space. The Department operates Oroville with some vacant space to use as flood control storage to manage these types of events and protect people and property downstream. The required flood control space was restored January 12; the space was encroached again on January 22 when another series of major storms brought more flood water.

On January 11, the SWP began accepting flood water into the California Aqueduct through the Kern River Intertie to decrease flooding in the Tulare Lake Basin. By the end of February, about 50,000 acre-feet of flood water from the Kern River Intertie had entered the Aqueduct.

In early February, by effectively managing Oroville water releases, SWP reservoir flood-control space had almost been restored to normal capacity.

Based on snowpack conditions, reservoir storage, and precipitation patterns during the first months of 1997, the Department approved the entitlement water supply allocations at an unusually early date.

In early February 1997, the Department approved 100 percent of the water delivery requested by the 29 long-term State Water Contractors. This approval was based on a 99-percent exceedence. Exceedence refers to the fact that in 99 years out of 100, with similar conditions, there would be enough water to meet these requests. The water allocation is based solely on hydrology conditions.

New Year's Floods

Although the SWP successfully weathered the New Year's floods of 1997, other water systems in Northern California did not fare so well. There were two serious levee breaks in the Sacramento Valley—one on the Feather River south of Marysville and another on the Sutter Bypass west of Yuba City. The uncontrolled Cosumnes River, the Tuolumne River near Modesto, and the San Joaquin River near Fresno all experienced major flooding. Levees along the rivers proved inadequate for flood control during storms of this magnitude, raising serious concerns about the flood protection potential of the levee system.

Many of the levees on the Sacramento and San Joaquin river systems were originally constructed more than 100 years ago. The newest of the major river levees (along the north side of the American River) was constructed by the U.S. Army Corps of Engineers more than 40 years ago. These river systems have about 1,800 miles of flood control project levees; 1,300 miles of designated floodways; several thousand acres of project channels; and 55 other major flood control works, including overflow weirs and bypasses. Naturally, continued vigilance and maintenance of these structures are critical elements of flood control. These duties are shared by federal, State, local, and private entities.

Another strong storm system arrived January 20. Fortunately, a break in heavy storms allowed flood control systems to drain and partly restore reservoir flood control space in the Sacramento and San Joaquin systems. Although this storm was only about two-thirds as strong as its predecessor, it was heavier in some lower-elevation areas and resulted in significant local stream flooding.

After the torrential rains of December and January, supply seemed to be assured. However, as one of the driest springs on record continued, adequate water supply became a growing concern because much of the excessive rain had flowed into the ocean. In May 1997, responding to the dry springtime conditions, the Department considered reducing allocations to less than 100 percent of the requested amount. However, final allocations remained at 100 percent by working with the contractors, rescheduling, and drawing groundwater banked by the SWP in Kern County groundwater basins.

February was extremely dry. Although December and January were the wettest pair of months in the northern Sierra, February and March 1997 were among the driest. Since record-keeping began, only 1923 and 1988 had less precipitation.

Precipitation in April in the northern Sierra was a little more than half of normal. Snowpack in the northern Sierra measured a little more than half the average, and no region of the State had normal snowpack by that time. Oroville releases were curtailed to only 1,900 cubic feet per second—almost the allowed minimum amount.

The SWP had to manage limited supplies for environmental protection within the Delta. On April 15, 1997, the SWP and CVP began to reduce exports to minimize impacts to protected fish species in the Delta.

SWP Delta operations were modified in late May and early June because of concerns for delta smelt. A greater number of the delta smelt population remained in the Delta through spring and summer because of the unusually dry spring. SWP exports continued at about 6,400 cubic feet per second.

Water year 1996-97 ended September 30, 1997, with statewide precipitation at 120 percent. Despite the extreme dryness of the spring, the water year was classified as a wet year—the third consecutive for California.

An interesting fact about the water year classification for 1997 is that the water year classification does not accurately show the water supply concerns and water management actions that the Department had to face due to the extremely dry conditions after late-January.

Precipitation in the first 3 months of water year 1997-98 began with an October storm in Northern California that supplied average amounts of rain in the northern Sierra. Fortunately, the storm spared the Central Valley; harvest weather in 1997 was the best in years. Statewide reservoir storage in late October was good—a little above the average storage for the date.

Precipitation during November was also above average. A cool, upper-level storm system from the northern coast created a bank of showers that lasted about a week. The northern Sierra received 9 inches of precipitation in November. In-state reservoir storage remained in good condition.

El Niño, a warming trend in the tropical Pacific Ocean that can impact weather conditions throughout the world, had started building in May and June 1997. El Niño continued to build in December, producing abundant warm water to supply energy to the southern branch of the westerlies in the jet stream. This situation was expected to cause continuing above-average precipitation in California during the remainder of water year 1997-98. El Niño is described in more detail on page 7.

Unlike the previous December, December 1997 was slightly below average in precipitation. The northern Sierra received only 5 inches compared to the 8.3 average. Statewide, runoff in December was about 70 percent of average for the month; in-state reservoir storage was 108 percent of average.

1997 Water Deliveries

The SWP delivers water for agricultural, environmental, industrial, urban, and other needs. In 1997, despite the erratic patterns of precipitation and runoff, the SWP conveyed 2,347,207 acre-feet of water to 26 long-term contractors.

In addition to the entitlement water delivered to long-term contractors, 322,000 acre-feet were trans-

ferred or exchanged under individual SWP or CVP agreements.

The SWP also delivered 4,146 acre-feet of recreation/fish and wildlife water, and 993,211 acre-feet—the largest amount ever—to water rights settlement holders. Water rights settlement contractors are agencies that had water rights for Feather River water before the SWP was built. The Department negotiated settlements with these water-rights holders and generally agreed to deliver a regulated water supply from Oroville in exchange for the agencies' agreement concerning their Feather River water rights.

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

Table 1-1 shows SWP water deliveries by category and years.

El Niño

During May and June 1997, an unusual warming trend in the tropical eastern Pacific Ocean indicated that a large El Niño was forming near the Equator off South America.

Climatologists predicted that the event would have world-wide impacts and would last well into fall and winter.

Weather conditions in July and August 1997 were fairly normal, with no unusual occurrences other than more moisture moving northward from tropical weather systems. The El Niño continued to build and be tracked by climatologists.

By September, the media had become interested in the growing El Niño event. Several predictions were made based on computer models, although this particular event was earlier than the 1982 El Niño and uncertainties made modeling difficult.

On October 6, 1997, the Department participated in the El Niño preparedness summit and press conference at the Capitol. Departmental staff from the Office of Water Education worked with the State Office of Emergency Services and Resources Agency to schedule a series of eight preparedness workshops. These workshops spotlighted statewide plans to deal with weather-impact emergencies. During October, sea surface temperatures in the east central and eastern equatorial Pacific were the warmest ever recorded for that month. The National Weather Service Climate Prediction Center estimated that the phenomenon would continue into spring.

El Niño continued to build during December 1997, creating abundant warm water to supply energy to the southern branch of the westerlies in the jet stream. This situation was expected to cause above-average precipitation in California during 1998.

SWP Design and Construction

Coastal Branch, Phase II—Final Construction and Testing

On June 18, 1997, nearly 300 State and local leaders gathered to celebrate completion of the Coastal Branch, Phase II water project. The Coastal Branch delivers SWP water to San Luis Obispo and Santa Barbara counties. The project was a joint effort between the Department and the Central Coast Water Authority, a local agency formed to finance, construct, and operate State water treatment and delivery facilities on behalf of Santa Barbara County project participants. Figure 1-2 shows a map of the project area.

The Coastal Branch project demonstrated a spirit of cooperation and dedication among the individuals and organizations involved. The CCWA operates and maintains the facilities under an agreement between the Department and the agency.

The 143-mile pipeline includes the Polonio Pass Water Treatment Plant, storage tanks, and four pumping plants. The Polonio Pass Water Treatment Plant delivers the only treated water into the SWP for further transportation to the Santa Barbara County service area.

Construction of the pipeline and related facilities was an engineering accomplishment. Engineers used the latest "trenchless" technologies to cross several streams and the Santa Ynez River. Boring machines tunneled beneath the stream beds and crews bored under Highway 101 in three locations. The entire

Table 1-1
Water Delivered by Category (acre-feet), 1962-97

Year	Entitlement Water [a]			Other Water Deliveries					Total Deliveries
				Surplus & Unscheduled					
	Municipal/ Industrial (1)	Agricultural (2)	Total (3)	Municipal/ Industrial (4)	Agricultural (5)	Other Water [b] (6)	Feather River Diversions [c] (7)	Recreation Water (8)	(9)
1962						18,289			18,289
1963						22,456			22,456
1964						32,507			32,507
1965						44,105			44,105
1966						67,928			67,928
1967	5,747	5,791	11,538	0	0	53,605			65,143
1968	46,472	125,237	171,709	10,000	111,534	14,777	866,926		1,174,946
1969	34,434	158,586	193,020	0	72,397	18,829	794,374		1,078,620
1970	47,996	185,997	233,993	0	133,024	38,080	759,759		1,164,856
1971	85,286	272,054	357,340	2,400	293,619	44,119	778,362	8	1,475,848
1972	181,066	430,735	611,801	22,205	401,759	66,638	817,398	6,489	1,926,290
1973	293,824	400,564	694,388	3,161	293,255	42,511	800,743	1,155	1,835,213
1974	418,521	455,556	874,077	4,753	412,923	46,224	911,613	2,118	2,251,708
1975	641,621	582,369	1,223,990	21,043	601,859	63,793	862,218	3,377	2,776,280
1976	818,588	554,414	1,373,002	32,488	547,622	115,217	946,440	1,745	3,016,514
1977	280,919	293,236	574,155	0	0	389,065	581,994	1,111	1,546,325
1978	742,385	710,314	1,452,699	3,566	13,348	121,225	786,517	1,691	2,379,046
1979	690,659	969,237	1,659,896	66,081	582,308	187,630	882,549	1,766	3,380,230
1980	730,545	799,204	1,529,749	19,722	384,835	46,459	875,045	2,131	2,857,941
1981	1,057,273	852,289	1,909,562	12,000	896,428	279,161	838,557	4,688	3,940,396
1982	928,721	821,303	1,750,024	0	215,873	154,882	776,330	4,646	2,901,755
1983	483,499	701,370	1,184,869	0	13,019	181,453	602,905	7,849	1,990,095
1984	725,925	862,694	1,588,619	3,663	259,254	381,024	832,332	7,040	3,071,932
1985	992,538	1,002,915	1,995,453	9,638	298,034	404,842	870,008	4,033	3,582,008
1986	998,611	997,025	1,995,636	2,595	34,025	193,606	791,737	3,865	3,021,464
1987	1,096,368	1,033,718	2,130,086	6,949	107,958	377,592	831,947	7,672	3,462,204
1988	1,316,820	1,068,302	2,385,122	0	0	507,076	794,834	4,889	3,691,921
1989	1,602,454	1,251,293	2,853,747	0	0	474,559	830,500	8,135	4,166,941
1990	1,876,072	706,079	2,582,151	0	90	424,697	875,099	9,262	3,891,299
1991	536,669	12,444	549,113	3,521	0	551,051	565,395	4,879	1,673,959
1992	961,649	509,805	1,471,454	1,156	0	144,789	613,978	2,605	2,233,982
1993	1,064,866	1,250,369	2,315,235	0	0	254,854	822,589	2,609	3,395,287
1994	1,183,142	678,834	1,861,976	0	0	236,739	874,018	8,200	2,980,933
1995	819,554	1,211,869	2,031,423	0	0	78,425	860,077	2,575	2,972,500
1996	1,157,729	1,385,743	2,543,472	0	0	251,391	934,997	3,907	3,733,767
1997	1,260,014	1,085,937	2,347,207	0	0	322,000	993,211	4,146	3,666,564
Total	23,079,967	21,375,283	44,456,506	224,941	5,673,164	6,651,598	24,372,452	112,591	81,491,252

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

pipeline is buried at least 4 to 5 feet below ground surface and consists of about 20,000 sections of coated and lined steel pipe. Drilling new tunnels in rugged Calf Canyon and West Corral de Piedra in San Luis Obispo County was particularly challenging. In addition, engineers renovated existing tunnels, including the mile-long tunnel through the 1,400 foot Cuesta Grade, and refurbished and lined tunnels with concrete.

Experts call the project an environmental achievement as well. The pipeline crossed 18 environmentally sensitive communities along the route, including habitat for dozens of protected plant and animal species, ranging from the San Joaquin kit fox to the burrowing owl and red-legged frog. Before construction began, environmental specialists built miles of fence and captured endangered blunt-nose leopard lizards, transporting them to other suitable habitat.

Revegetation of areas affected by construction is also a component of the project. Revegetation began before construction was completed and will continue for 5 years. Efforts include restoration and careful monitoring of special biological communities along the pipeline route, including riparian, oak woodlands, and chaparral habitats. More than 60,000 acorns were collected and planted as part of the revegetation work.

Testing the Coastal Branch, Phase II system began in October 1996. Full operation began in August 1997, and treated water deliveries began August 11. The Department and the Central Coast Water Authority staffed all critical field stations 24 hours a day. Most remaining contract settlements and testing were completed by the end of 1997.

Phase II delivers water for municipal and industrial use to Santa Barbara County Flood Control and Water Conservation District and San Luis Obispo County Flood Control and Water Conservation District.

The project takes advantage of the latest technology. State-of-the-art equipment monitors seismic movement along the entire route. In case of a pipeline rupture, operations can be halted quickly to make repairs and reduce water loss. Fiber optic cable runs along the entire length of the pipeline and is part of the project's automated monitoring and control system. This system allows technicians at the Polonio Pass Water Treatment Plant in San Luis Obispo County and in Sacramento to monitor and operate the facilities around the clock. In addition, technicians in the field are able to use portable, hand-held computers to monitor and modify operations.

East Branch Extension

In July 1995, the Department completed a feasibility study to extend the East Branch of the SWP from the Devil Canyon Powerplant to the San Gorgonio Pass Water Agency service area. SGPWA is the last original contractor to have access to SWP water. Phase I is sized for 50 percent of SGPWA's maximum Table A entitlement (8,650 acre-feet).

SGPWA and San Bernardino Valley Municipal Water District agreed to participate in a 2-phase project to meet present water needs and financial capability.

The East Branch Extension will bring SWP water to Yucaipa, Calimesa, Beaumont, Banning, and other nearby communities. It will add flexibility to wheel local supplies within the SBVMWD service area. Figure 1-3 presents a map of the East Branch Extension, Phase I area.

The completed East Branch Extension will be a 33-mile pipeline linking 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 13.5 miles of new pipeline and use 19.5 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 constructed to bypass the SBVMWD Greenspot pipelines and pumping station, which has limited capacity.

On August 20, 1996, SBVMWD and SGPWA signed an agreement to participate in the East Branch Extension. SGPWA is the last SWP contractor to receive SWP water through direct delivery or exchange. The Department is proceeding with the final design and construction of the Phase I facilities.

The project schedule was revised to include a supplement to the final environmental impact report. The supplement will cover alignment changes on the Sin-

Figure 1-2
Coastal Branch Project

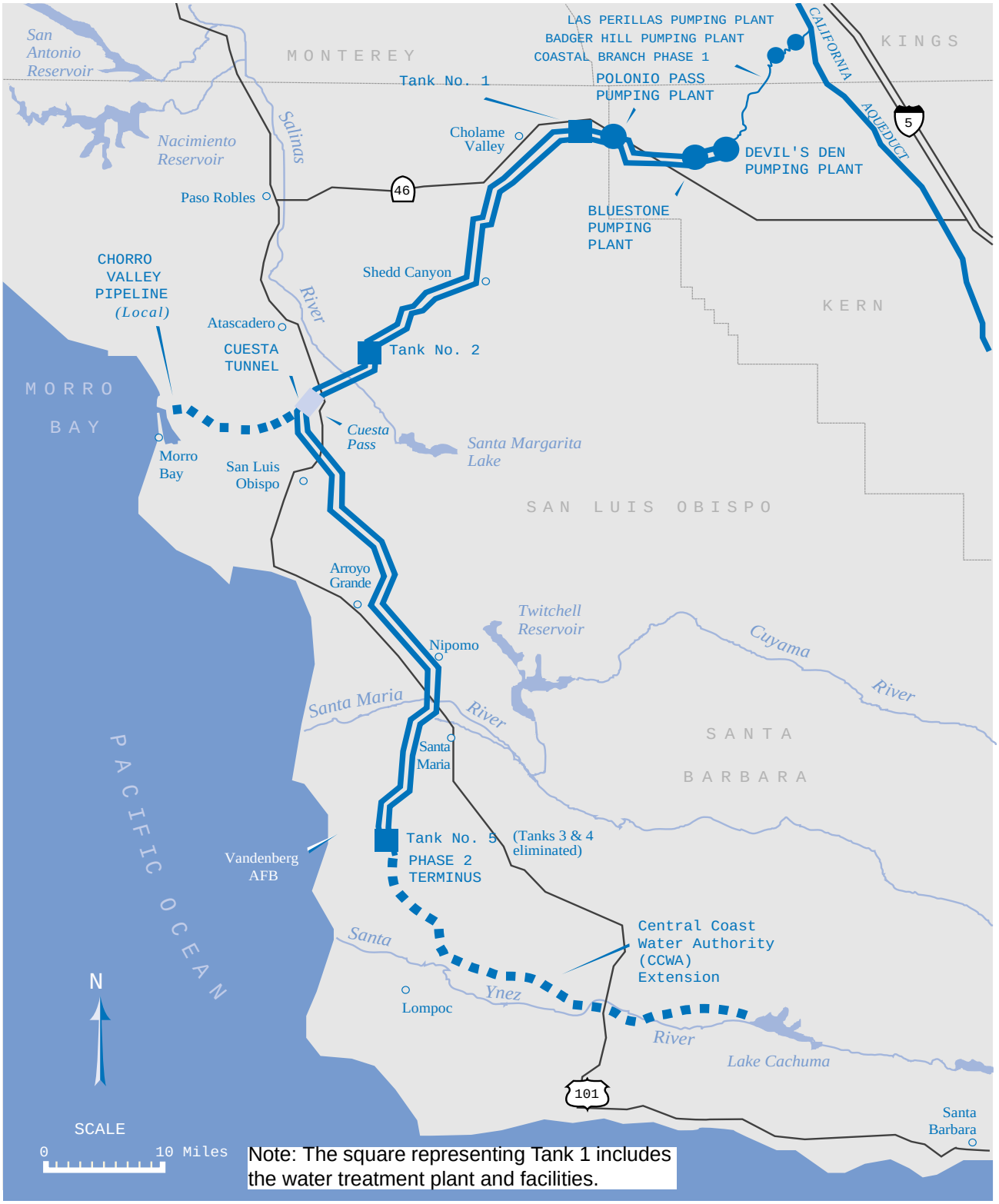
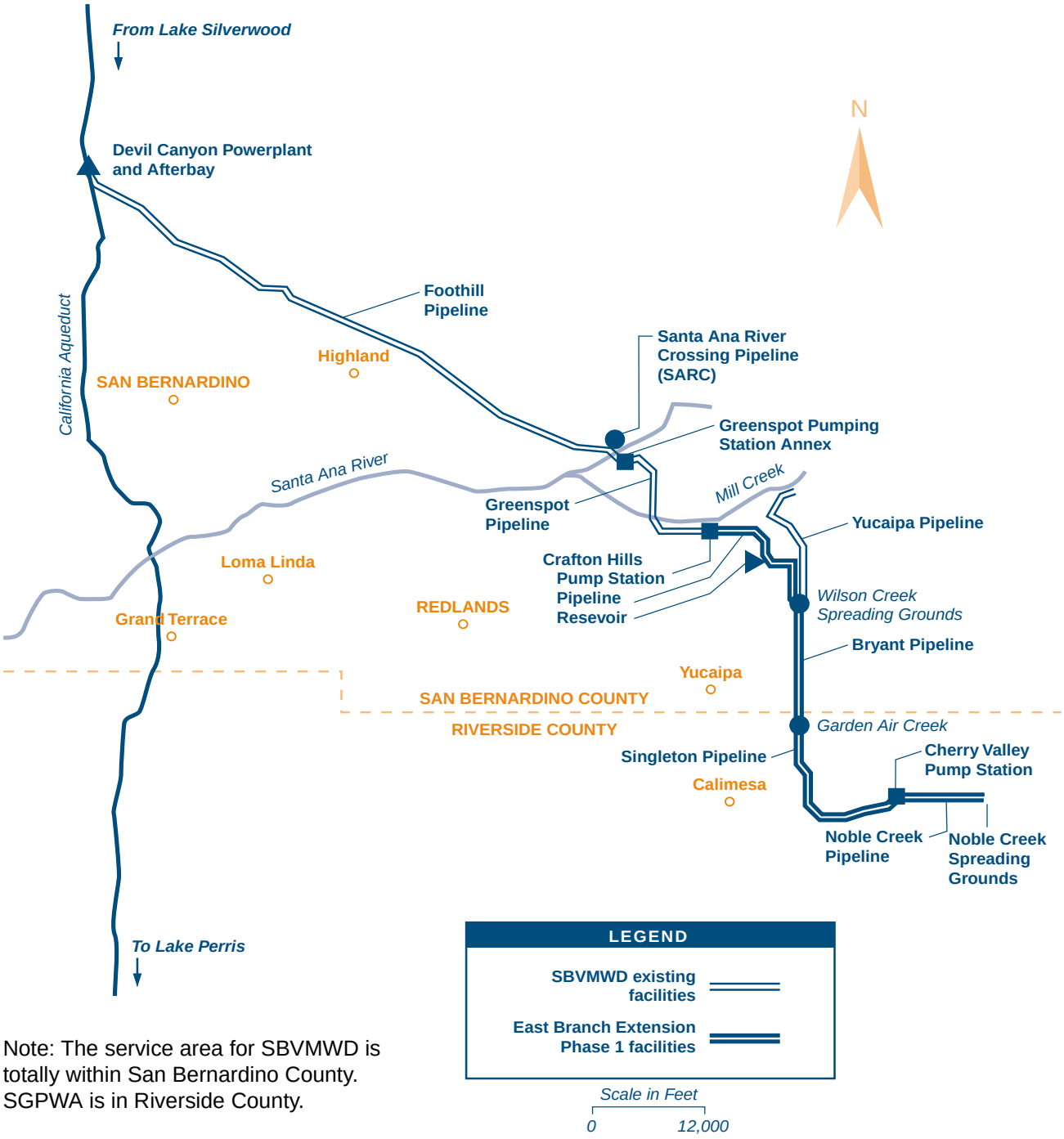


Figure 1-3
East Branch Extension Project, Phase I



Note: The service area for SBVMWD is totally within San Bernardino County. SGPWA is in Riverside County.

gleton Pipeline and the addition of the Crafton Hills Pipeline and Reservoir. By October 1996, the entire alignment had been flown and aerial photographs taken. Topographic mapping began and team members walked the proposed Crafton Hills alignment and agreed on a route.

By December 1996, the first draft of the project management plan had been prepared and distributed. Topographic mapping was well under way and geologic exploration began.

The administrative draft of the supplemental environmental impact report was completed and reviewed by selected team members and representatives of the participating water agencies. On June 18, 1997, a meeting was held in San Bernardino to discuss incorporation of the comments. Coordination meetings were also held to discuss surveying properties, writing property descriptions, drawing appraisal maps, appraising the properties, and acquiring the easements.

Completion of Phase I is scheduled for the year 2001 and will provide an annual supply of up to 8,650 acre-feet to the SGPWA. (Phase II is not planned until SGP's demands increases. It will provide an additional 8,650 acre-feet annually.)

In fall 1997, the supplemental EIR was printed. The official review period began November 21,1997, and continued until January 5, 1998. By the end of December 1997, very few comments had been received.

The $80-million Phase I portion of this project will help meet the region's water needs for the next 40 years, reduce groundwater overdraft, and provide more flexibility for local water systems.

Power Issues

Like many energy-intensive industries, the SWP depends heavily on a reliable, cost-effective power and transmission infrastructure in California. On September 23, 1996, Assembly Bill 1890 passed into California law. New protocols and procedures significantly affected the California electric utility industry. AB 1890 restructured the electric utility industry in California by calling for the creation of the California Independent System Operator, which will operate the transmission grid in California, and the California Power Exchange, which will function as a power pool also.

Restructuring will impact the way the Department conducts its power and transmission transactions. Although the Department can operate under its existing contracts, the Department intends to participate in the ISO and PX as soon as possible. The timing and extent of the Department's participation depend on technical, organizational, and cost issues being debated at the Federal Energy Regulatory Commission by ISO, PX, and other stakeholders. Department staff actively participated in the numerous "stakeholder" groups that worked throughout 1997 to develop the ISO and PX, scheduled for operation on January 1, 1998. This work included both operational protocols and tariffs filed with FERC. The Department expects to participate in both the ISO and PX following their start-up.

In 1997, the Western Systems Coordinating Council, an electric utility organization that includes the Department, began developing the Reliability Management System to address the major transmission outages that impacted western states for brief periods in the summer of 1996. SWP operation was interrupted during this time due to transmission outages. The proposed WSCC program would impose monetary sanctions on its participating members for violating criteria designed to avoid major transmission disruptions. The proposal is based on members contractually agreeing to pay sanctions. The Department plans to participate in the RMS program and avoid the sanctions.

The Department increased its efforts to relicense the Oroville Facilities with FERC. Although the current license does not expire until 2007, the complexity of the relicensing process demands a lengthy preparation period. Departmental staff began meeting with experienced utilities and consultants to determine how best to prepare for this massive effort.

Division Reorganization

The Department hired a public agency consulting firm to recommend organizational and personnel

changes in certain divisions, districts, and offices. These changes were implemented by the Department to increase efficiency and improve departmental business practices.

The divisions and offices affected by the reorganization include: Division of Local Assistance, Division of Planning, Environmental Services Office, and the Office of Water Education. The proposed changes include:

- The Division of Planning was renamed the Office of State Water Project Planning, in line with its new focus on SWP activities and needs;
- The Division of Local Assistance was renamed the Division of Planning and Local Assistance;
- The Statewide Planning Branch was transferred from the Division of Planning to the Division of Planning and Local Assistance;
- Delineators and drafting personnel from the Statewide Planning Branch moved to Graphic Services in the Office of Water Education;
- The Environmental Support Section from the Division of Planning will be renamed the Environmental Documentation and Review Branch and transferred to the Environmental Services Office;
- Several organizational changes were made in the San Joaquin District and Central District of the Division of Planning and Local Assistance; and
- Certain branches and sections of the Office of State Water Project Planning and the Division of Planning and Local Assistance were renamed and staffing realigned to better reflect their functions.

The Office of State Water Project Planning will focus on SWP needs. The Division of Planning and Local Assistance will have a statewide focus that includes support for SWP planning activities in the districts.

The reorganization took effect July 1, 1997.

Information in this chapter is based on material from the Director's reports and news releases from Office of Water Education.

Chapter 2
Delta Resources

Bridge in the Delta
Central Valley region

Significant Events

- Based on the success of the pilot projects at Sherman, Twitchell, and Jersey islands, the Department increased opportunities to reuse clean, bay-dredged materials in the Sacramento-San Joaquin Delta.
- Delta Flood Control Program staff at Central District is developing a process to prioritize funding distribution under AB 360.

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 other Delta water users;
- determine levels of flow and salinity necessary to protect fish and wildlife habitat; and
- devise methods to control flooding, protect fish and wildlife, and provide recreational activities.

Delta Water Management Programs

Over the last decade or so, the Department's planning programs focused on solving water management problems in three distinct areas of the Sacramento-San Joaquin Delta: the north Delta, west Delta, and south Delta (Figure 2-1). In 1992, a new water policy redirected the Delta planning programs to emphasize solutions that will improve conditions in the Delta. Meanwhile, long-term Delta solutions would be deferred to a separate process and would include public involvement from all interest groups. As part of the policy to "fix the Delta," actions were directed in the south Delta to be implemented in the short term.

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

Interim South Delta Program

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

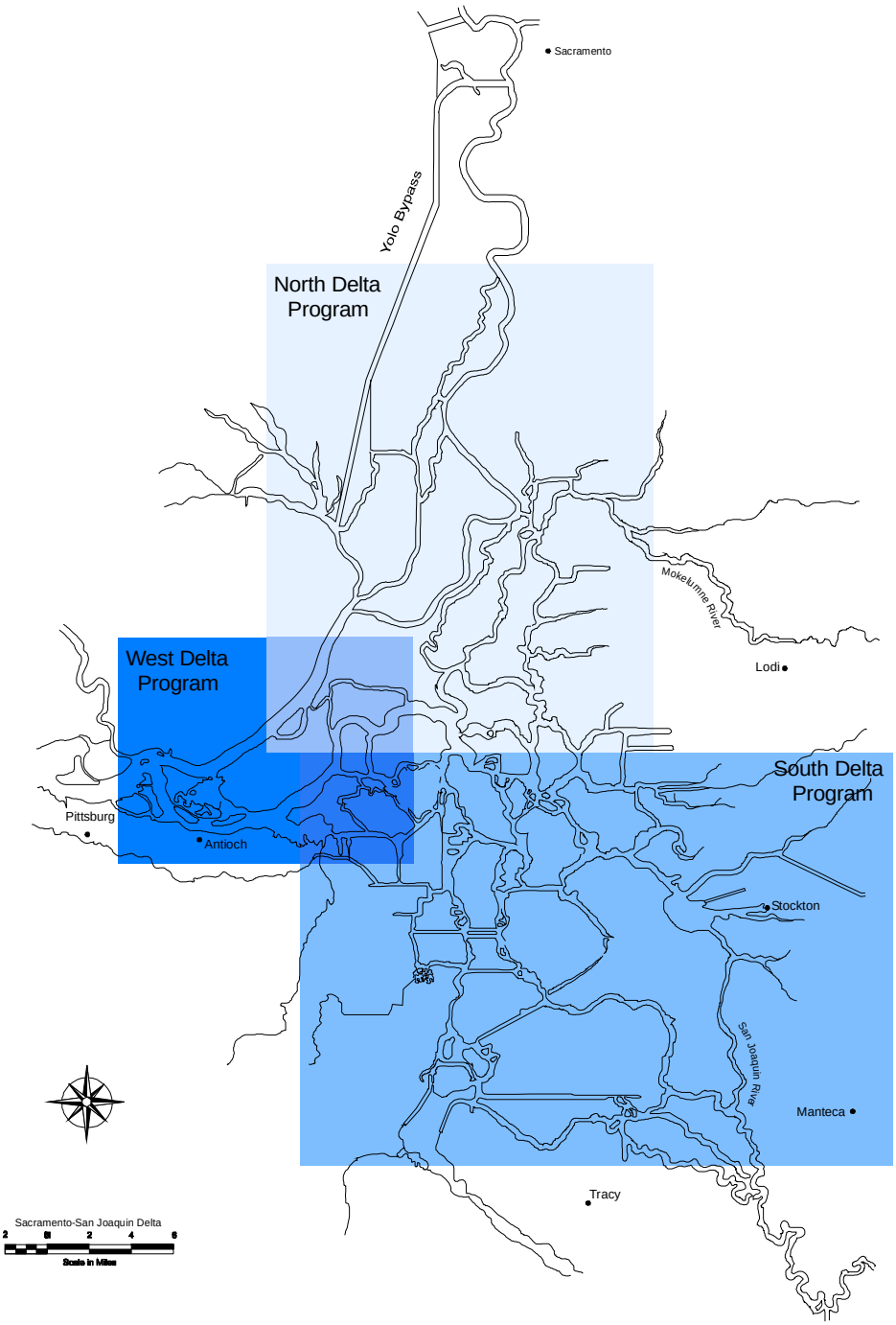
Preferred Alternative

The current preferred alternative consists of:

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

Increasing diversions into Clifton Court Forebay would allow Banks Pumping Plant to pump up to its maximum design capacity of 10,300 cubic feet per

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



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

Environmental Review Process

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

The necessary permits will be issued by the Corps according to 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 permit must be coordinated with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, the Environmental Protection Agency, and the California Department of Fish and Game.

Temporary Barriers Project

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

In addition, biological monitoring programs were conducted to:

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

Clean Water Act

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

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

Temporary rock barriers are being tested at four sites:

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

The barrier at the head of Old River prevents San Joaquin River flow from entering Old River and

flowing toward export facilities. The additional flow in the San Joaquin River helps to 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.

The Old River at head barrier has been installed in the fall since 1963 and intermittently in the spring since 1992; the Old River near Tracy barrier has been installed since 1991; the Middle River barrier has been installed since 1987. The Grant Line Canal barrier was installed and operated for the first time in July 1996.

Interim North Delta Program

In fall 1995, the Department suspended Interim North Delta Program planning activities in deference to the ongoing efforts of the CALFED Bay-Delta Program. The CALFED Bay-Delta Program addresses the issues identified in the INDP in a comprehensive manner, with input from involved stakeholders, regulatory agencies, and cooperating agencies. The Department provides logistical and technical support to help assure solutions that are technically and economically sound, so that the large body of information developed as part of the INDP is fully integrated into the CALFED process.

West Delta Program

The objectives of the West Delta Program are to:

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

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

The Department is a major landowner on both Twitchell and Sherman islands, with two trustees each on Reclamation District 1601 (Twitchell Island) and Reclamation District 341 (Sherman Island). This allows the Department to improve the management and accountability of the operation of both districts. The reclamation districts provide for levee maintenance, island drainage, and some internal water supply. The district can assess the land for operation of the public districts.

Delta Flood Control Program

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

In SB 34, the Legislature declared its intent to appropriate $12 million annually through fiscal year 1998-99 for the Delta Flood Protection Fund. Six million dollars of the appropriation are for local

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

Delta Levee Maintenance Subventions Program

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

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

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

Special Projects

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

For the eight western Delta islands, the California Water Commission approved a report of initial or "fast-track" actions in September 1989 and approved the long-term actions and priorities in May 1990. The long-term plans are being used by the Department to determine how to best use appropriations to protect the eight islands. Those protections include: rehabilitating threatened levees through the use of imported dredged material; verifying elevations in the Delta through the use of Global Positioning System equipment; and upgrading levees to the standards included in Bulletin 192-82, *Delta Levees Investigation*. Depending on the ability-to-pay of each reclamation district, the Department pays up to 100 percent of the cost of these activities. Districts receiving funds under the Special Flood Control Projects Program are required to participate in habitat improvement programs to ensure a net long-term habitat improvement.

Some projects already completed or in progress through the Special Flood Control Projects Program include:

- Bethel Island Phase I (1995)—5,200 feet of long-term landside levee improvements;
- Bethel Island Phase II (1995)—5,100 feet of long-term landside levee improvements;
- Twitchell Island levee setback (1995)—3,000 feet of levee setback;
- Sherman Island cross-levee repair (1995)—upgrade to Hazard Mitigation Plan standard;
- Hotchkiss Tract Phase I HMP (1996)—2,700 feet of levee improvement to the HMP standard;
- Sherman Island long-term levee improvements (1996)—construction of stability berms along portions of levee adjacent to the Mayberry Slough and San Joaquin River;

- Bradford Island (1996)—construction of stability berm to address severe cracking and foundation deformation; and
- Webb Tract (1996)—4,400 feet of levee repairs for areas with stability and seepage problems.

Subsidence Investigations

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

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

- land management practices substantially influence subsidence rates;
- permanent shallow flooding can stop the microbial subsidence processes;
- 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.

The Department was granted Category III funds by CALFED to construct a Subsidence Reversal Demonstration Project on Twitchell Island. The 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.

Upland Relocation of Dredged Material

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 to demonstrate the viability of relocating material from the San Francisco Bay Area.

The pilot projects at Sherman, Twitchell, and Jersey islands required extensive monitoring and testing programs. No adverse salinity impacts were found.

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

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

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

Levee Upgrades

The Department funds upgrades to the levees according to standards contained in Bulletin 192-82, *Delta Levees Investigation*. According to those standards, the agricultural levees must be raised to provide 1.5 feet of freeboard for a 300-year flood and widened to a 16-foot crown width, with a waterside slope of at least three horizontal to one vertical.

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.

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

The special study is divided into two phases. Phase I began in September 1991 and ended in March 1993. The Phase I report, called the *Initial Report*, describes problems, possible solutions, and opportunities to improve and/or provide flood protection, fish and wildlife habitat, water quality, recreation, and navigation. The *Initial Report* included a plan that identified existing and future land uses in years 2000, 2020, and 2040. The report discussed developing a comprehensive plan, primarily for flood control, navigation, and environmental restoration. Phase II is due to go to construction in June 1998.

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

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

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

Delta Water Rights Management

Several agencies in the western Delta have rights to water in the Delta. To manage those water rights and resolve issues associated with them, the Department negotiated water rights management contracts with

some of the agencies concerned. Those agencies serve agricultural, municipal, and industrial users of Delta water.

Delta Agricultural Water Users

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

South Delta Water Agency Contract

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

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

Western Delta Municipal Water Users

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

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

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

Chapter 3
Environmental Programs

Fish screens to intercept and protect fish from State Water Project export pumps were installed at the Skinner Fish Facility near Banks Pumping Plant in 1968.

Significant Events

- Operational actions in 1997 to improve conditions for fish species of concern included: (1) increasing flows in the San Joaquin River and decreasing Delta exports between April and May to benefit fall-run chinook salmon emigrating from the San Joaquin River basin; (2) curtailing Delta exports in late spring due to the sustained presence of delta smelt in the central and south Delta; and (3) implementing the Spring-Run Chinook Salmon Response Plan to minimize project impacts to spring-run salmon emigrating in the fall.

- The U.S. Fish and Wildlife Service and the National Marine Fisheries Service postponed decisions for listing the Sacramento splittail and Central Valley populations of chinook salmon and steelhead as threatened or endangered species under the federal Endangered Species Act until after 1997. The California Fish and Game Commission designated the Sacramento spring-run chinook salmon a candidate species under the California Endangered Species Act.

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

The Department of Water Resources has developed programs and taken measures to avoid, minimize, or offset adverse environmental impacts that might result from construction and operation of State Water Project facilities.

Operations for Fish Species of Concern

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

San Joaquin River Spring Pulse Flow

The Department cooperated with U.S. Bureau of Reclamation to decrease Delta exports and increase flows in the San Joaquin River from April 15 through May 15, 1997, to benefit fall-run chinook salmon emigrating from the San Joaquin River basin. The pulse flow objective for 1997 was 5,700 cfs, while the export objective was 2,250 cfs. Studies focused on estimating the survival of marked salmon moving through the Delta at the same time as the pulse flow. These studies conducted over a number of years will determine if a relationship exists between river flow, Delta exports, and salmon survival through the Delta. The results will determine if changing San Joaquin River flows and Delta exports in the spring can significantly benefit San Joaquin River fall-run chinook salmon.

Delta Export Curtailments Due to Delta Smelt

SWP operations were modified in late May and early June in response to the distribution and salvage levels of delta smelt. Although the 1997 water year was classified as wet, spring 1997 was the driest on record for Central California. The distribution of young delta smelt was typical of dry year hydrology, with a greater proportion of the population remaining in the Delta through spring and summer. Historically, the salvage of delta smelt is substantially higher under dry conditions.

The biological opinion on the effects of SWP/Central Valley Project operations on delta smelt uses the combined (SWP and CVP) delta smelt salvage to set thresholds to reinitiate consultation between U.S. Fish and Wildlife Service, USBR, Department of Fish and Game, and the Department. If needed, further actions are taken to reduce water project impacts on delta smelt. These thresholds include:

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

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

The red-light level is based on historic salvage data and varies among the months of the year and water-year types. For example, in a water year that is classified as above-normal or wet like 1997, the red-light level ranges from 733 fish in December to 11,990 fish

in October. Monthly red-light levels for below-normal water years are generally higher—as much as six times higher—than levels for above-normal water years.

In 1997, combined delta smelt salvage increased dramatically during May. The yellow-light level was exceeded by May 12, and the red-light level (9,769 delta smelt) was exceeded by May 16. Combined salvage remained high throughout the month, and by the end of May the total monthly salvage (31,686 delta smelt) exceeded the red-light level more than threefold.

Remedial actions implemented by the CALFED Operations Group included:

- holding project exports at 2,250 cfs and delaying export ramp-up until the end of May;
- early removal of the temporary barrier at the head of Old River; and
- opening the Delta Cross Channel gates.

In addition, USBR reinitiated formal consultation with USFWS and the following actions were immediately implemented:

- continuing to hold the Delta Cross Channel gates open;
- maintaining upstream water releases in the American and Sacramento rivers; and
- maintaining a Delta export/inflow ratio of 35 percent.

Although the actions taken in late May and early June benefited delta smelt, combined salvage remained high through early June. In response, the flap-gates on the south Delta temporary barriers were held open through much of June, and the SWP reduced exports by 1,000 cfs from June 7 through June 11. In conjunction with this reduction in exports, the CALFED Management Team agreed (with concurrence from the State Water Resources Control Board executive director) to increase the Delta export/inflow ratio from 35 to 40 percent through the remainder of June. In addition, daily review of delta smelt distribution as well as salinity levels at Emmaton were used to determine whether the Cross Channel gates should be open or closed.

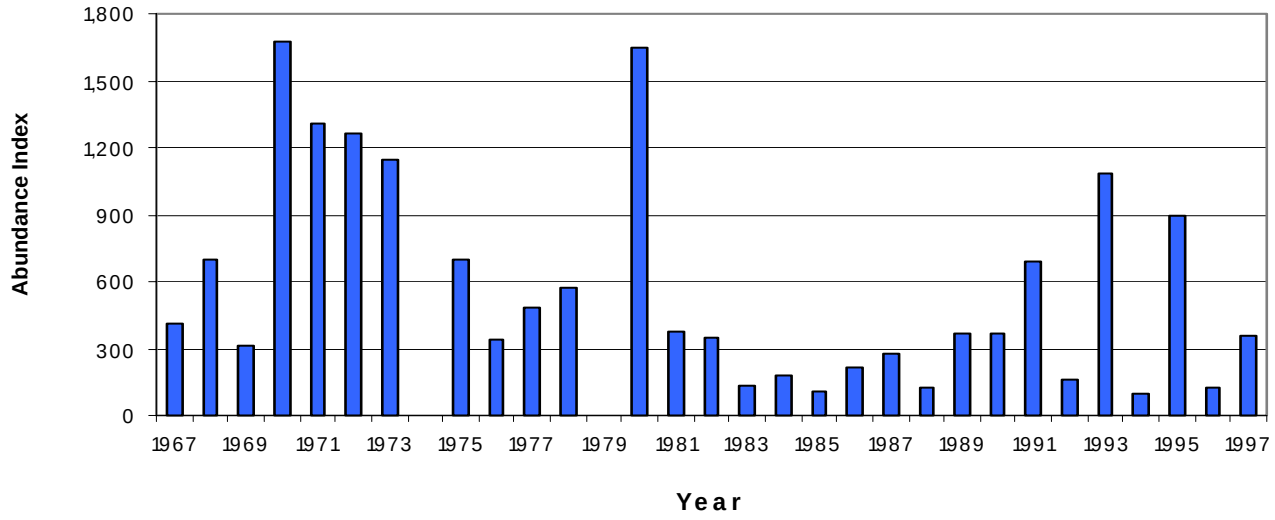
Delta smelt salvage began declining in mid-June and remained low after June 23. In fact, combined salvage moved below the yellow-light level by month's end. The SWP and CVP were able to maintain an export/inflow ratio of 40 percent throughout the latter part of June. The south Delta temporary barriers became fully operational on June 24. Actions taken for delta smelt in spring 1997 reduced SWP/CVP combined exports by 23,000 acre-feet (13,000 in May and 10,000 in June) from base-case operations.

Figure 3-1 shows the abundance index for delta smelt from 1967 through 1997 based on fall midwater trawl sampling. The fall index is important because it is the best, although relative, indicator of the adult delta smelt abundance. The index for 1997 was up from 1996, extending the odd-year high abundance, even-year low abundance phenomenon observed since 1991. Scientists do not know what causes these variations in abundance among years.

Spring-Run Chinook Salmon Response Plan

In June 1997, the California Fish and Game Commission adopted a Special Order instructing DFG to assess the range of possible flow and export conditions that yearling and smolt spring-run salmon may encounter within the Delta. If operational changes are deemed necessary, then DFG was instructed to develop and present a plan to the CALFED Operations Group recommending target levels of protection and measures to achieve that protection. The resulting plan targeted late-fall SWP and CVP operations and outlined a monitoring program, identified indicators that would trigger a response, and identified possible actions to minimize SWP/CVP impacts on spring-run salmon. Flow, turbidity, and fish movement or presence were all continuously monitored by use of in-stream measurements, surveys, and fish screw traps. The indicators included increases in flows or turbidities in the Sacramento River and its tributaries, fish migration towards the Delta, and the detection of spring-run salmon at the

Figure 3-1
Delta Smelt Fall Midwater Trawl Abundance Indexes, 1967 through 1997



export facilities. Possible actions included the closure of the Delta Cross Channel gates, cessation of outflow modifications (a return to the 4,500 cfs average north Delta outflow index for the remaining period), and other operational adjustments as needed. Implementation of the plan started in November 1997 and is planned to continue through January 1998. Closure of the Delta Cross Channel gates during much of the late fall was the only operational response necessary in 1997.

Petitions to List Additional Fish Species

Federal and State fish and wildlife agencies are considering petitions to list additional fish species as threatened or endangered. Listing would increase the opportunity for these species to impact project operations. The USFWS decision to list splittail as threatened was postponed again. This species has been under consideration for listing since 1994. NMFS did not act on coastwide petitions to list steelhead trout and chinook salmon in 1997, but will likely do so in 1998. The California Fish and Game Commission did restrict sport fishing catch of steelhead trout in 1997, in anticipation that the species will be listed. In March 1996, the California Fish and Game Commission concluded that there was insufficient evidence to support the listing of the Sacramento spring-run chinook salmon as endangered. This decision was challenged and overturned by the courts. The Commission reconsidered its decision in 1997 and on June 13 designated the Sacramento spring-run chinook salmon a candidate species under CESA. The Commission also adopted a Special Order relating to the incidental take of spring-run salmon during the candidacy period. The special order found that the level of habitat loss and take of spring-run salmon likely to occur during the candidacy period will not cause jeopardy to the continued existence of the species. Based on those findings, the Commission authorized the take of Sacramento River spring-run salmon during the candidacy period, subject to specific terms and conditions. Finally, DFG staff began preparation

of a status review of spring-run salmon, which will be completed in 1998.

Fish Population Estimates

Figure 3-2 shows estimates of returning adult winter-run chinook salmon from 1967 through 1997. The

Figure 3-2
Estimated Total Winter-Run Chinook Salmon Escapement, 1967 through 1997

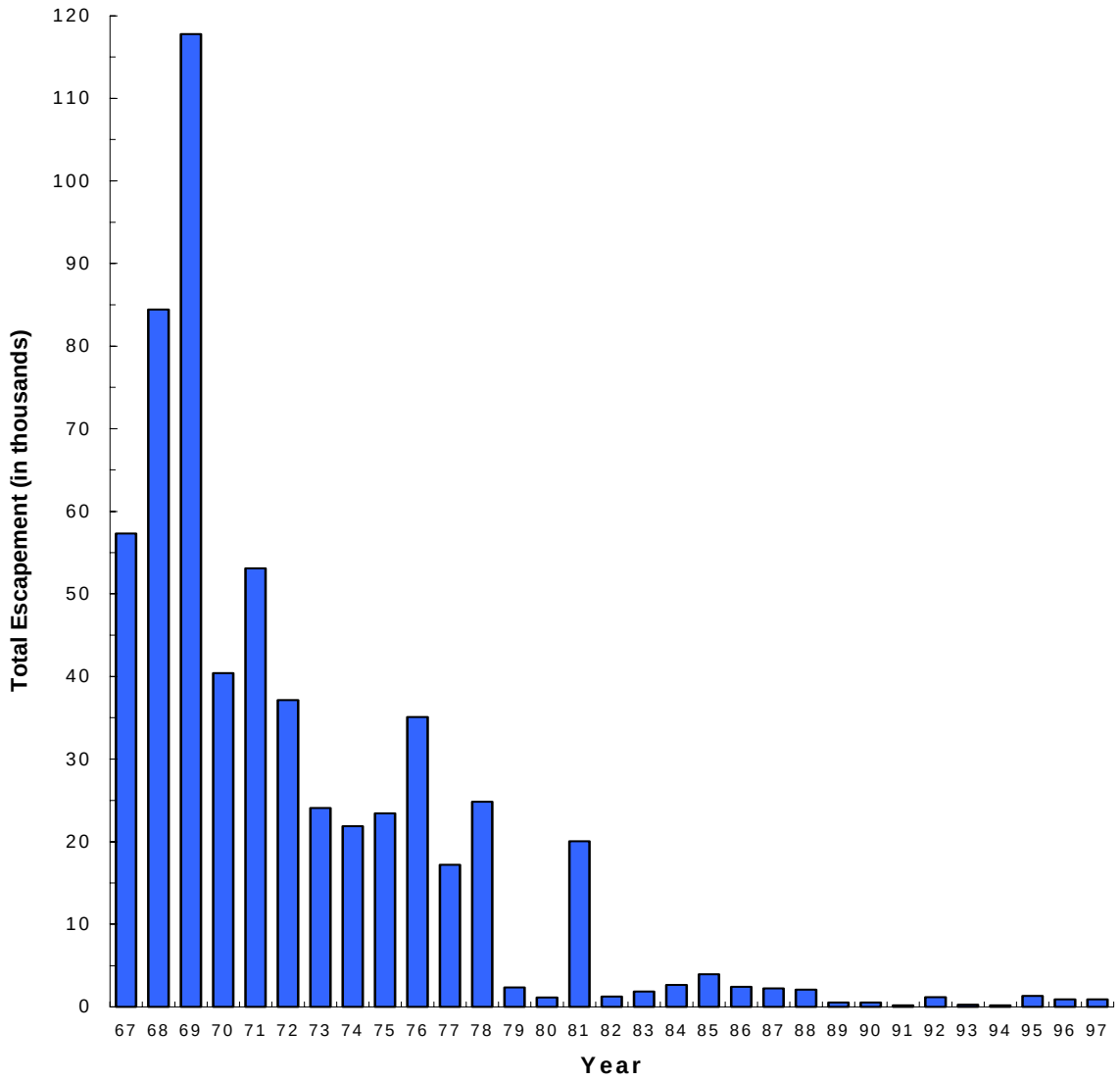
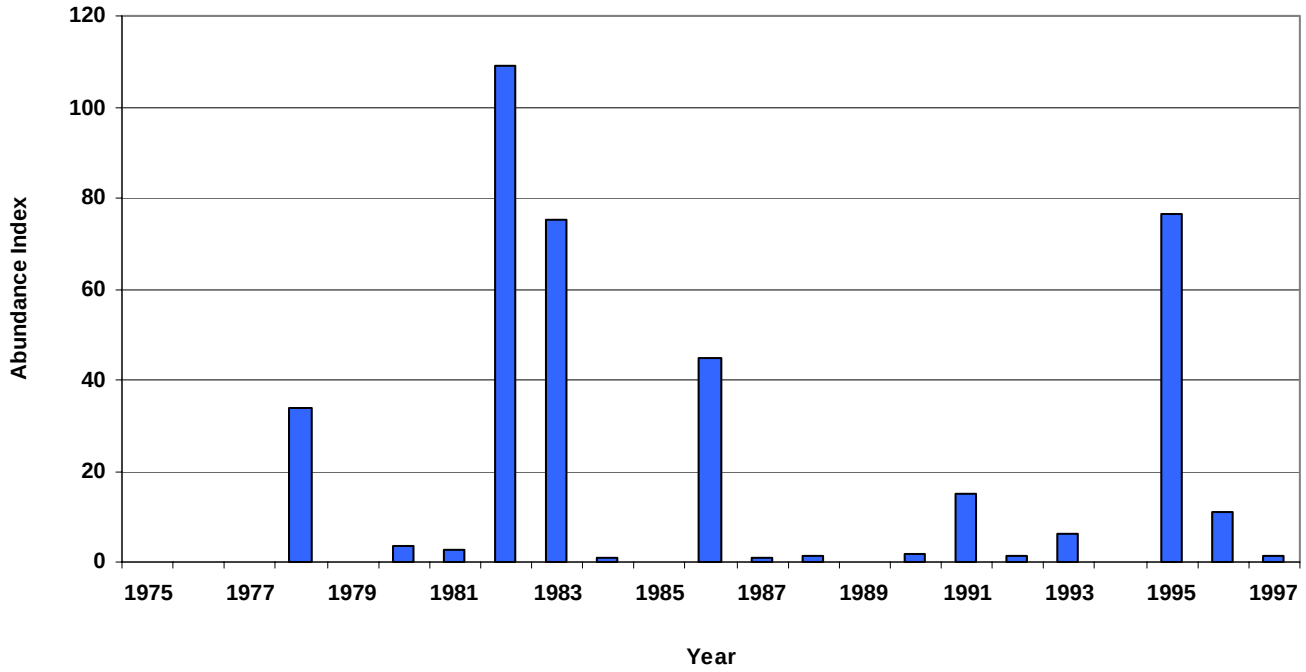


Figure 3-3
Young-of-the-Year Splittail Abundance Index, Fall Midwater Trawl, 1975 through 1997



estimated escapement for 1997 was 900, which more than replaced the estimated 189 adults in the parent stock of 1994. This is a very positive sign for winter-run salmon, as it demonstrates the reproductive population is increasing. Factors such as improved spawning and rearing habitat, reduced losses in the Delta, and reduced commercial fishing are all thought to have benefited winter-run salmon.

Figure 3-3 shows the fall midwater trawl index for young-of-the-year Sacramento splittail for the period 1975 through 1997. The 1997 index was lower than that of 1996, similar to index values observed during the 1987-92 drought. Probably the low abundance index in 1997 was related to the local climatic conditions in California. Although the 1997 water year was classified as wet, spring 1997 was the driest on record for Central California. Splittail reproduce in spring and appear to have higher reproductive success in years when ample seasonally-flooded habitat (e.g., Sutter and Yolo bypasses) is available. This was not the case in spring 1997.

Feather River Fish Studies

Joint Department and DFG salmon studies continued in 1997 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 1997 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 superimposition of spawning adults is a major problem in the river, particularly in the low-flow channel. Superimposition occurs when salmon repeatedly spawn in the same location, digging up previously deposited eggs and smothering other nests, resulting in decreased egg survival. This type of excessively localized spawning activity appears to be related to both salmon density and flow distribution. It appears that more flow from the low-flow channel may attract more salmon to the upper reach of the river, exacerbating the problem. This effect may cancel out benefits from increased spawning area that is available at higher flows. A yearly trend toward higher densities of salmon spawning immediately downstream of Feather River Fish Hatchery suggests hatchery operations may also play a role in spawning superimposition. This hypothesis will be further investigated in coming years, using results from a tagging program at the hatchery.

Mitigation Projects

In 1986, the Department and DFG signed an agreement, the Four Pumps Agreement, that annually provides funds to implement fishery projects to replace fish lost at the export facilities. It also provides $15 million for additional projects to compensate for substantial 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 a total of $21 million on mitigation projects developed under this agreement, which includes improving salmon spawning and rearing habitat, planting hatchery- and net-pen-reared striped bass, and implementing a conjunctive-use project to improve salmon migration flows in Mill Creek in Tehama County and enhance enforcement of fish and game laws in the Delta and upstream to benefit salmon, steelhead, and striped bass.

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

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

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

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

Other mitigation projects approved in 1997 for implementation from the agreement's annual and $15 million funds include:

- increased game law enforcement to better protect spring-run salmon in the upper Sacramento River and tributaries;
- design and construction of several fish screens and ladders on Butte Creek to improve survival of migrating salmon, particularly spring-run, and steelhead;
- stocking 100,000 yearling striped bass;
- planning and constructing several salmon habitat projects on the Merced River to improve salmon survival by eliminating predator habitat from rearing areas and migration pathways and by improving salmon-spawning habitat;
- constructing seven fish screens in the Suisun Marsh; and

- operating a pen to acclimate hatchery-reared salmon during their release into San Francisco Bay to improve their survival.

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

Chapter 4
Water Quality Programs

Rio Vista Bridge, dedicated in 1960, supports one of the Department's water quality monitoring stations on its fishing pier.

Significant Events

- The Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Estuary (1995 Bay-Delta Plan) guided the operations of the State Water Project in the Sacramento-San Joaquin Delta. The CALFED Operations Group provided guidance and plans of operation that incorporated a real-time monitoring program to benefit estuarine habitat and biota. In December 1997, the *Principles for Agreement on Bay-Delta Standards* between the State and federal government (Bay-Delta Accord) was extended for an additional year.

- Water quality sampling for the oxygenated fuel additive MTBE (methyl tertiary-butyl ether) was conducted on 10 reservoirs of the SWP. Samples were collected from boat ramp areas and in the open reservoirs. Higher levels of MTBE were found near boat ramps than open waters, and the SWP Southern California lakes had the highest levels.

- On August 9, 1997, oil was discovered in the California Aqueduct at milepost 62.23, following the collapse of a section of the aqueduct liner. The source of the oil was determined to be residual oil in the soil from a 1984 pipeline leak of a Union Oil pipeline crossing at that location. The oil already in the aqueduct was contained, using absorbent booms, and contaminated soil next to the aqueduct was removed. Daily water sampling at sites next to and downstream of the oil spill initially detected purgeable organics and hydrocarbons for the first 2 weeks, but none were detected thereafter.

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

Delta Activities

The State Water Resources Control Board sets water quality objectives for various beneficial water uses. The Department of Health Services establishes maximum contaminant levels for treated drinking water. Additional contractual water quality objectives at points of delivery are set by Article 19 of the long-term SWP water supply contracts. Water quality in the Delta and Suisun Marsh is protected under the SWRCB Decision 1485, as amended by Water Right Orders 95-1 and 95-6, to be consistent with the *Principles for Agreement on Bay-Delta Standards*, December 15, 1994 (Bay-Delta Accord).

The Bay-Delta Accord, formulated by CALFED and representatives of several urban, agricultural, and environmental water interests, was intended to be in effect for 3 years. The Accord established new outflow standards, modified 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 Water Right Order 95-6, an interim order amending the terms and conditions of SWRCB's D-1485 and the SWP and Central Valley Project water rights permits to be consistent with the Bay-Delta Accord. In December 1997, members of CALFED signed an agreement to extend the Bay-Delta Accord for 1 year. New funding for Category III activities was also approved.

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 2, 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.

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

The Department conducts extensive monitoring to protect beneficial uses of water in the Delta and Suisun Marsh as required by SWRCB D-1485, amended by WR 95-6. The Department and the U.S. Bureau of Reclamation began to operate under the Bay-Delta Accord shortly after it was released in December 1994. 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 1996-97 water year was classified as "above average" for most of California. It came on the heels of the 1995-96 water year, also classified as "above average," and was the third wet year in a row.

After a very wet December, a deluge at the start of January 1997 produced record flood flows in most major rivers and the biggest flood this century at many Central Valley foothill reservoirs, including Oroville. The season then became one of the driest on record for February through May, creating the driest late winter and spring period of record (76 years).

June precipitation was more than twice average, but the remaining months of the water year, July through September, were near normal. Statewide precipitation for the 1996-97 water year was 125 percent of average.

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

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

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

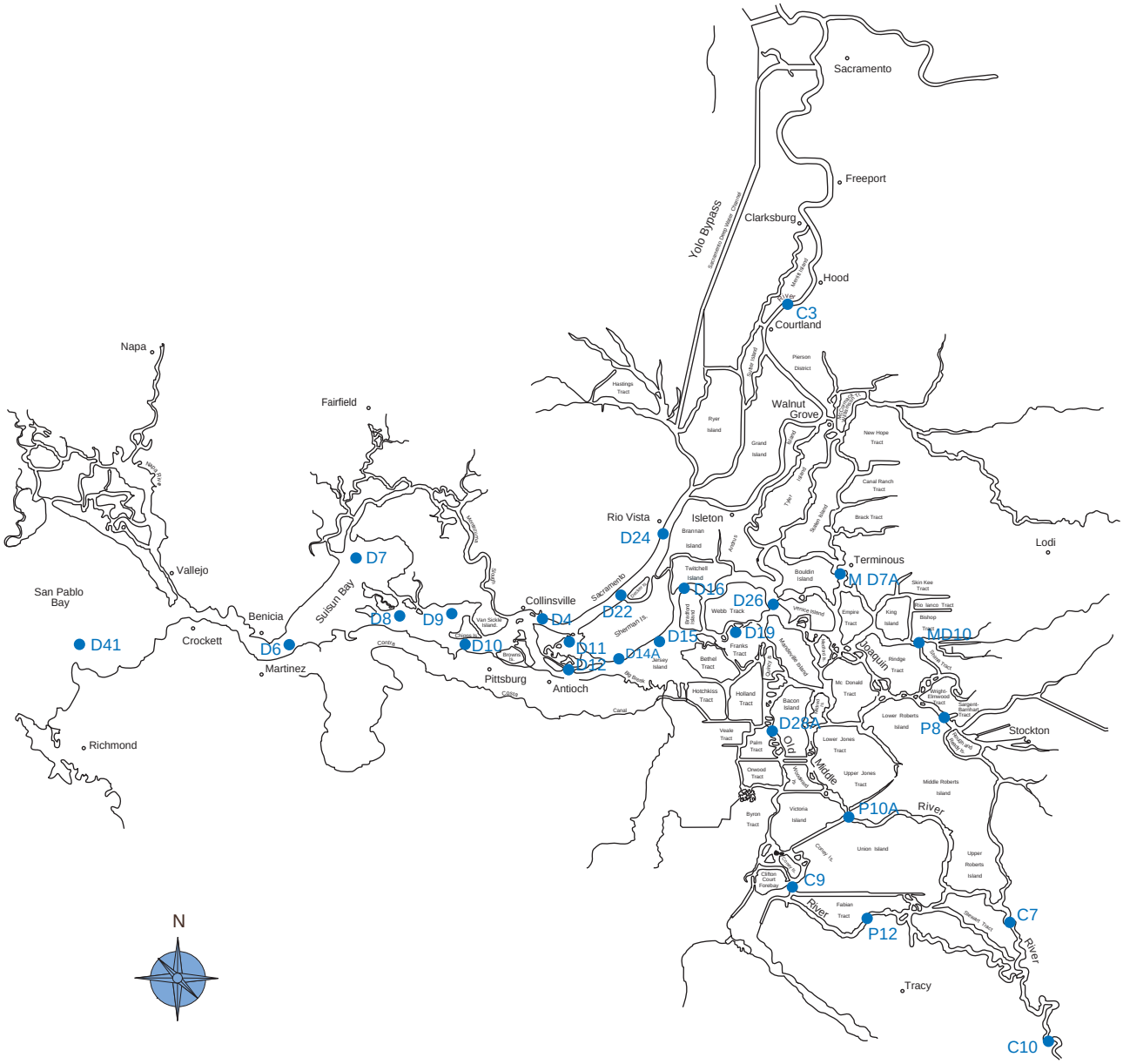
The 1995 Bay-Delta Plan also includes a San Joaquin River Basin 60-20-20 Index, which uses methods similar to the Sacramento River 40-30-30 Index. The sum of both indexes—the Eight River Index—is used to determine the duration of the fish and wildlife salinity/flow standard at Chipps Island and, under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

The April-July SVUR forecast for May 1, 1997, was 4.8 million acre-feet and 73 percent of average. The resulting 40-30-30 Index was 11.0 million acre-feet, more than the 1995-96 40-30-30 Index of 9.7 million acre-feet. The water year was classified as "wet" for all beneficial uses. The San Joaquin 60-20-20 Index was also classified as "wet" for 1997, with 3.1 million acre-feet. The Eight River Index was forecast as 8.7 million acre-feet for April through July; the actual was less at 7.9 million acre-feet.

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



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

The Department and USBR agreed to operate the projects in accordance with the Bay-Delta Accord beginning in January 1995. The agreement established water quality, flow, and operational criteria for the estuary. Operations of the CVP and SWP were to be guided by the CALFED Operations Group through coordination with Central Valley Project Improvement Act and CESA requirements. The Ops Group, formed in 1994 by the Framework Agreement between the Governor's Water Policy Council of the State of California and the Federal Ecosystem Directorate, consists of representatives from seven State and federal agencies. The agreement also expands "real-time monitoring" of fish movements and conditions in the estuary to aid daily water management. The purpose of real-time monitoring is to provide a more timely protection of targeted fish species from entrainment at the Delta facilities of the SWP and CVP and provide water supply reliability. See Chapter 3 for more environmental issues.

In 1997, the Ops Group could not agree on an operational plan for export curtailments in mid-April through May with make-up water exported during the fall. The issue was elevated to the CALFED management team for resolution. On April 25, the first CALFED agreement covering the real-time operation of the SWP and CVP was signed and distributed to the CALFED Management Team.

Water Quality Standards

During 1997, high January and February flows, export restrictions, and water releases to benefit migrating fish (both pulse and attraction flows) helped maintain all electrical conductivity values below objectives.

In 1997, all water quality requirements for wet-year conditions were met. Specific water quality requirements are set to benefit municipal, agricultural, and fish and wildlife uses. The SWRCB wet-year municipal and industrial water quality standard for chloride at the Contra Costa Canal Intake near Rock Slough was met, as was an additional year-round municipal and industrial standard for maximum chloride levels of 250 mg/L at the Contra Costa Canal, Tracy Pumping Plant, Clifton Court Forebay, Barker Slough, and Cache Slough. However, in late October, the chloride levels at Contra Costa Canal rose to over 200 mg/L and remained high for the rest of 1997. These higher values were not a result of project operation, but were due to local drainage entering Rock Slough and the shift of Contra Costa Water District pumping to a new intake at Old River. In response, exports were restricted and Delta outflows increased through upstream releases to successfully meet the EC standard.

Agricultural objectives in 1997 included an EC standard of 0.45 µS/cm (14-day running average) during the irrigation season from April through mid-August, set at Emmaton, Jersey Point, Terminous, and San Andreas in the western and central Delta. Additional salinity standards were applied year-round in the southern Delta on the San Joaquin River, Old River, and at Tracy and Clifton Court Forebay (30-day running average). All agricultural standards were met.

Estuarine Habitat Protection Standard (X2)

The estuarine habitat protection standard incorporates a modified X2 criteria or 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 µS/cm at the surface, is maintained within a certain range of positions in the estuary by reservoir releases or 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 µS/cm) is in effect at Chipps Island or, under specific conditions, at Port Chicago, are 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 µS/cm or with specific Delta outflow set at a 3-day average of 11,400 cfs or 29,000 cfs, when the X2 position is at Chipps Island or Port Chicago, respectively. The Port Chicago standard is usually in

effect during months 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 µS/cm. However, the February Port Chicago objective is only in effect when the January Eight River Index is greater than 1 million acre-feet. During 1997, the Eight River Index for January through May was 12.15 million acre-feet, 2.76 million acre-feet, 2.44 million acre-feet, 2.70 million acre-feet, and 2.97 million acre-feet, respectively.

From February through June, a wet-year habitat protection flow, measured as Net Delta Outflow, is set at 7,100 cfs, calculated as a 3-day running average. This standard may be used in lieu of the Collinsville minimum daily average or 14-day running average EC of 2.64 mS/cm. During 1997, Collinsville EC values remained below this threshold and EC was used to meet compliance instead of NDOI.

The X2 criteria was met at Port Chicago for the specific number of days required per month, with EC values less than 2.64 µS/cm (14-day running average). Figure 4-1 shows water quality monitoring sites throughout the Sacramento-San Joaquin Delta.

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 through December, respectively. During these periods, the 7-day running average cannot be more than 1,000 cfs below the monthly average. Rio Vista flow never fell below 10,000 cfs during the entire year.

The winter-run salmon biological opinion requires both minimum San Joaquin River base and pulse flows, which are measured at Vernalis. 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. All Vernalis base flows were met, with mean period base flows of 32,138 cfs, 12,884 cfs, 3,515 cfs, and 3,887 cfs for February, March, April 1 to 15, and May 16 to 30, respectively. The June base flow of 2,860 cfs met the applicable requirement of 2,130 cfs during that month.

During wet years, the San Joaquin River spring pulse flow for April 15 to May 15 is set at a period 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. February through April were extremely dry months, and flow at Vernalis during the pulse flow period was forecast at 4,000 to 5,000 cfs. The CALFED Ops group adjusted its operational plans to reflect dry conditions and met fishery concerns with restricted exports and Cross Channel gate operations. San Joaquin River flow during the April 15 to May 15 pulse flow period averaged 5,314 cfs.

An additional requirement calls for a minimum monthly San Joaquin River flow rate of 1,000 cfs during October with an additional 28,000 acre-feet pulse/attraction flow to bring San Joaquin River flows to 2,000 cfs. October monthly flow averaged 2,557 cfs.

Net Delta Outflow

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 Net Delta Outflow Index, introduced in the 1995 Bay-Delta Plan, guided operations in 1997. 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, 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 1997, excess outflow conditions, as defined by the Coordinated Operating Agreement, predominated for 254 days or 70 percent of the year. January and the first half of February sustained flows over 100,000 cfs. Two periods of daily flows over 200,000 cfs occurred from January 1 through 13 and January 24 through February 2. The first period included 3 days of outflow over 500,000 cfs. Balanced conditions were only in effect for two periods—from May 19 though August 9 and from September 17 through November 23.

Excess conditions allow greater flexibility in project operations; however, two new outflow designations restricted exports during excess periods. A fish-related restriction is designated when export pumping may impact endangered or threatened Delta fisheries. An additional designation occurs when exports are restricted to balance the export/inflow ratios within set objectives. These designated restrictions were in effect during only 12 percent of the excess NDOI days.

The 1995 Bay-Delta Plan sets specific minimum monthly NDOI standards of between 3,000 cfs and 8,000 cfs for the protection of fish and wildlife during January and from July through December. In November 1997, the minimum NDOI was relaxed from 4,500 cfs to 4,000 cfs by the CALFED Ops Group in its Water Supply Recovery Plan to make up for spring export restrictions. Monthly NDOI was highest in January at 261,663 cfs. Monthly NDOI remained above 8,000 cfs during most months of the July through December NDOI standard period. The September and October NDOI dropped to 3,821 cfs and 4,894 cfs, still above the respective minimum monthly NDOI flow standards of 3,000 cfs and 4,000 cfs.

Additional NDOI minimums are set for the protection of striped bass from May 6 though July, usually between 10,000 cfs and 14,000 cfs. During years of subnormal snowmelt, which was the case in 1997, NDOI minimums are relaxed to 6,500 cfs, 5,400 cfs, and 3,600 cfs for the May 6 through 31, June, and July period, respectively. Actual NDOI averaged 11,692 cfs, 8,456 cfs, and 9,457 cfs, respectively. All NDOI standards were met in 1997.

Export Standards

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

The actual export amount is calculated using the 3-day average combined inflow rate for Clifton Court Forebay, excluding Byron-Bethany Irrigation District diversions from Clifton Court Forebay, added to the Tracy Pumping Plant diversion. The export/inflow ratio limit is reported as either a 3-day or 14-day running average. A 14-day running average of inflows is used unless storage withdrawals from upstream reservoirs are being made for export, in which case, a 3-day average of inflows is used.

In all water-year types, the February to June maximum combined export rate is 35 percent of Delta inflow; this may be relaxed in February during drier years to between 35 percent and 45 percent. During July to January, the export/inflow ratio rises to 65 percent.

Consultation with the U.S. Fish and Wildlife Service in May led to additional export reductions in early June. Because of this reduction in exports, the CALFED management team agreed, with concurrence from SWRCB, to increase the export/inflow ration from 35 to 40 percent for the second half of June.

The actual export/inflow ratio averaged only 18 percent during the more restrictive February to June period (35 percent objective). During the April 15 to May 15 period of export limits, the export/inflow ratio dropped to just 14 percent. Daily ratios remained below 35 percent except in late June when the ratio was allowed to increase to 40 percent, and then the ratios remained below 40 percent. From July through December 1997, the actual export/inflow

ratio was well below limits at just 49 percent for the period; it never exceeded 65 percent on a daily basis.

The Bay-Delta Accord sets export limits at 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, in 1997, the CALFED management team set an export rate for the period at 2,250 cfs. Actual combined CVP/SWP period exports averaged 2,229 cfs, or 42 percent of the Vernalis period flow (5,314 cfs), and the export/inflow ratio was only 14 percent. Export reduction continued through May 24, both to accumulate the required number of compliance days of EC < 2.64 µS/cm at Chipps Island and because of high salvage of delta smelt at the export pumps.

The CALFED management team developed a plan that identified actions to provide makeup water to replace exports voluntarily curtailed between April 15 to May 15. The Ops Group revised the CALFED plan to achieve makeup water by allowing a higher export-to-inflow ratio in some months and transferring water from upstream storage to San Luis Reservoir in others. The Banks Pumping Plant conveyed about 177,000 acre-feet for the CVP during February and March in anticipation of export restriction, and later in July, September, and October to make up for April to May export restrictions. Of this total, about 69,000 acre-feet were conveyed during a 23-day period from September 17 to October 9, which constituted almost 30 percent of Banks exports during the period.

Exports from the Delta were sharply curtailed on August 8, due to a leak in the California Aqueduct near Pool 10. Exports from Banks, which averaged less than 1,000 cfs, were limited to meeting the needs of the South Bay Aqueduct from August 9 to 17.

Concerns over meeting the Contra Costa Canal chloride standard restricted Banks exports in the first half of November to around 3,000 cfs. Exports rose again to over 6,000 cfs by November 20 and were sustained until December 15, when exports into Clifton Court Forebay increased by about 1,000 cfs or one-third of the total daily flow in the San Joaquin River, as allowed under the U.S. Army Corps of Engineers Public Notice 5820A (October 13, 1981).

Temporary Delta Barriers

South Delta Barriers

Several barriers are installed annually in the south Delta as part of the South Delta Temporary Barriers Project, an experimental program for long-range south Delta planning. 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. Barriers are located on Middle River, Old River at Tracy, Grant Line Canal, and at the head of Old River. The temporary barrier project was scheduled to end in 1995; however, the Department received a 5-year program extension.

The Grant Line Canal barrier was the last barrier proposed in the South Delta Temporary Barriers Project. The Department first applied for its permits with Department of Fish and Game and the Corps in 1995. However, its installation was postponed in 1995 and 1996 due to concern for nearby endangered Swainson's hawk nesting sites. Construction of Grant Line Canal barrier began May 21, 1997, and was expected to be completed by June 2. However, work stopped May 30 at the request of the Corps due to increased salvage of delta smelt at the Delta export facilities. Construction of Grant Line Canal barrier, including boat portage facilities, was completed June 4. However, the flap gates at the barrier were kept in an open position through June 23 due to smelt concerns. The removal of the barrier began September 25 and was completed by October 15.

The Middle River barrier is a temporary, tidally-controlled barrier installed near Victoria Canal, about one-half mile south of the confluence of Middle River and Trapper Slough. Prior to inclusion in SDTBP, it had been placed annually since 1987, as

specified in earlier agreements with the Department and South Delta Water Agency, to improve south Delta agricultural operations. In 1997, the Middle River barrier was installed on April 7, but the culvert flap gates remained open until April 16. On April 17, the barrier became fully operational. However, USFWS required the culvert flap gates to be reopened on May 19, and the gates remained open through June 23, due to concern over high delta smelt salvage numbers at the export pumps. The Middle River barrier's removal began September 29 and was completed October 15.

Installation of a rock barrier in the Sacramento-San Joaquin Delta

The Old River barrier at Tracy is a temporary barrier installed annually since 1991. The barrier is placed on Old River, east of the Delta-Mendota Canal intake at Tracy Pumping Plant. The Old River barrier at Tracy provides benefits similar to those of the Middle River barrier. Old River barrier at Tracy construction began April 8 and was completed April 16. Boat portage facilities were also built. Removal of the Tracy barrier began October 1 and was completed October 15.

Since 1969, a spring barrier has been placed across Old River at its head—where it meets the San Joaquin River—to prevent salmon from straying from their migration path into interior Delta sloughs and channels. In 1997, the barrier was redesigned to accommodate the full range of San Joaquin River pulse flows (3,110 cfs to 8,620 cfs) under the Bay-Delta Accord and to permit the passage of up to 1,000 cfs into Old River to meet agricultural needs and lessen the head differential at the barrier. Construction of the spring Old River barrier at head began April 8 and was completed April 16. Operation was discontinued May 15 and the barrier removed May 19 because of concern for delta smelt. However, a later evaluation of monitoring results from USFWS studies indicated that the barrier significantly improved salmon survival during April and May.

Fall Dissolved Oxygen Conditions in the Stockton Ship Channel

Dissolved oxygen concentrations in the Stockton Ship Channel are closely monitored by staff of the Bay-Delta Monitoring and Analysis Section during late summer and early fall each year. Monitoring is conducted because levels can drop below 5.0 mg/L in the eastern channel due to low stream inflows, warm water temperatures, high biological oxygen demand, reduced tidal circulation, and intermittent reverse flow conditions in the San Joaquin River past Stockton. These low dissolved oxygen levels can cause physiological stress to fish and block upstream migration of salmon.

A barrier is usually installed at the head of Old River during periods of projected low-fall outflow to increase net flows down the San Joaquin River past Stockton. The Old River barrier was not installed in 1997, a wet year, because late summer and early fall flow conditions in the San Joaquin River appeared to be enough to alleviate concerns. Average daily flows in the San Joaquin River past Vernalis approached 2,000 cfs in August and September and exceeded 2,000 cfs in October and November. These flows exceeded the late summer and early fall average daily flows of 1,000 cfs or less, which were experienced in this area during drought years.

Surface- and bottom-dissolved oxygen levels in the Stockton Ship Channel were obtained by vessel on eight monitoring runs conducted from August 4, 1997, to November 17, 1997. Monitoring from

August through October of 1997 showed a distinct surface- and bottom-dissolved oxygen sag in the eastern end of the ship channel, with the lowest values (5.0 mg/L or less) in and immediately west of the Rough and Ready Island area. High water temperatures and low inflow conditions appear to have contributed to the low dissolved oxygen conditions in the eastern channel. Water temperatures ranged from 25 to 27°C in August; 23 to 26°C in September; and 16 to 24°C in October. Average daily flows in the San Joaquin River past Stockton ranged from -466 cfs to 198 cfs in August; -329 cfs to 117 cfs in September; and -233 cfs to 439 cfs in October.

Dissolved oxygen conditions gradually improved in November as a result of cooler water temperatures and improved flow conditions in the San Joaquin River. On November 3, all dissolved oxygen levels exceeded 5.0 mg/L, although dissolved oxygen in the eastern channel was still depressed. By November 17, levels throughout the channel had improved to 5.8 mg/L or greater, and the dissolved oxygen decrease in the eastern channel had been essentially eliminated. This improvement was apparently due to cooler water temperatures (14 to 18°C) and the elimination of reverse flows past Stockton. Average daily flows past Stockton through mid-November ranged from 5 cfs to 189 cfs. The lack of late fall rainfall in the San Joaquin River drainage appears to have delayed the full recovery of dissolved oxygen levels in the channel to levels historically measured during November in previous years.

Biological Surveys

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

Benthic Monitoring

Monitoring of benthic (bottom dwelling) organisms is conducted by the Department pursuant to D-1485 to record abundance, document distribution of populations, and detect and document the introduction of exotic species into the Sacramento-San Joaquin Delta and Suisun and San Pablo bays. In January 1996, the monitoring program expanded from six to ten sites to sample benthic organisms over a wider range of benthic habitat types throughout the Delta and Suisun and San Pablo bays. Benthic data are collected at Clifton Court, Twitchell Island, Rio Vista, Rough and Ready Island, Old River, Collinsville, Bulls Head Point near the mothballed fleet, Grizzly Bay, Pinole Point, and at the mouth of the Petaluma River.

The Asian clam, *Potamocorbula amurensis*, was unintentionally introduced into the San Francisco Bay-Delta System in the early 1980s. The clam has since expanded its range throughout the western Delta and northern San Francisco Bay and become a dominant component of the benthos in this region. Data from the western sites have provided significant information on population trends of *P. amurensis*.

Flows throughout the Bay-Delta System can influence the distribution of benthic organisms by altering sediment composition, water salinity, and other variables that are important to benthic organisms' life cycle. Average daily flows in the Sacramento and San Joaquin rivers are monitored at Freeport and Vernalis, respectively. Monitoring showed that major inflows to the system occurred from December 1996 through March 1997, with peak flows occurring in January 1997. Average daily flows in January were 30,377 cfs in the San Joaquin River and 87,109 cfs in the Sacramento River. The high winter rainfall resulted in water year 1997 being classified as a wet year.

The monitoring station at the mouth of the Petaluma River in San Pablo Bay is the westernmost site sampled. In winter and early spring 1997, abundance of *P. amurensis* was low, due in part to the extremely high outflow of January 1997. Spring populations grew steadily, peaking in April at 7,100 clams/m^2. May through August populations were lower, relatively stable, and ranged from 5,100 clams/m^2 to 5,700 clams/m^2. *P. amurensis* density declined steadily throughout the fall and reached a winter minimum of 300 clams/m^2 by January 1998.

The Pinole Point monitoring station in San Pablo Bay generally has the highest abundance of *P. amurensis* of all sites sampled. Winter and spring populations were relatively low and stable in 1997, ranging from 0 clams/m^2 to 774 clams/ m^2 from January to mid-May. Populations were highly variable in the summer, peaking in June at 9,000 clams/m^2, dropping to 2,600 clams/m^2 in July, and rising again to 6,900 clams/m^2 in August. As at the Petaluma River site, *P. amurensis* density declined in the fall, with a slight rise to 2,800 clams/m^2 in October 1997, possibly due to recruitment from late summer spawning.

Clam density at the Bulls Head Point site near the mothballed fleet in Benicia was low in winter and early spring of 1997, ranging from 250 to 700 clams/m^2. Populations increased in late spring, reaching a June peak of 2,500 clams/m^2. Summer, fall, and early winter densities were variable, ranging from 600 clams/m^2 to 2,500 clams/m^2 from July through December. The low numbers of clams in winter may be due in part to high freshwater outflow to the site.

The influence of high outflow from February through April 1997 may have kept *P. amurensis* numbers relatively low at Grizzly Bay until late summer. January through August populations ranged from 370 to 1,650 clams/m^2. Fall populations rose to a peak of 3,500 clams/m^2 in October and December. The rise in density during early fall may have been due to a second, late summer spawning event. Density trends at Grizzly Bay appear to differ from the more westerly sampling sites, with population peaks occurring later in the year.

The Collinsville site is the most easterly station where *P. amurensis* was found. Historically, populations of clams found at this site have been low. In 1997, populations ranged from 0 to 40 clams/m^2 from January through September, with a small peak of 200 clams/m^2 in February. Levels gradually rose in the fall to a peak of 1,000 clams/m^2 in November. This peak may have been caused by late summer spawning.

Phytoplankton Monitoring

Phytoplankton are free-floating microscopic plants in the water column. They form the base of the aquatic food web and directly influence the health of the Bay-Delta estuary. Their standing stock in water is estimated by concentrations of the phytosynthetic pigment chlorophyll *a*.

During 1997, chlorophyll *a* concentrations were consistently <4 µg/L in most regions of the San Francisco Bay Estuary; they reached nearly 10 µg/L in the northern Delta and San Pablo Bay during the spring or fall. Chlorophyll *a* concentrations were low at the stations where 2 and 6 ppt salinity were located. These findings were similar to those of other stations in the lower Sacramento River and Suisun Bay regions, but slightly higher concentrations occurred at the 2 ppt station. Chlorophyll *a* concentrations above 50 percent at most stations suggest that phytoplankton were growing well throughout the estuary, except at the 6 µS/cm floating station, where percentages were consistently below 50 percent.

In 1997, chlorophyll *a* concentrations were below historical levels in most regions; this may partially be the result of extremely high stream flows produced by the floods of January 1997. The chlorophyll *a* concentrations in the Sacramento River, lower San Joaquin River regions, and western, eastern, and central Delta were lower than those measured in the 1970s and early 1980s. The relatively high chlorophyll *a* concentrations in the southern Delta were also lower than those measured in the 1970s, but well above those measured in the 1980s. In contrast, chlorophyll *a* maxima of 8 to 9 µg/L in the northern Delta and San Pablo Bay were among the highest values on record. Chlorophyll *a* concentrations in Suisun Bay remained below 4 µg/L, as has been common since establishment of the Asian clam, *P. amurensis*, in 1986. High stream flow pushed clams downstream in 1993 and enabled development of a 1 to 2 week increase in chlorophyll *a* concentration to 20 µg/L in Suisun Bay in years past. This phenomenon did not appear to occur in 1997. The absence of a bloom in 1997 may be due to higher stream flow in 1997 that flushed phytoplankton downstream or to undetected blooms of short duration occurring between the monthly sampling frequency of the Compliance Monitoring Program.

Chlorophyll *a* maxima varied seasonally. Spring chlorophyll *a* maxima occurred in April or May in most regions, usually followed by additional fall

maxima in August or September. A chlorophyll *a* maximum in the lower Sacramento River during February appears to have been produced by outflow from the Yolo Bypass, because higher chlorophyll *a* concentrations were not measured in the northern Delta upstream of the bypass, and the bypass was flooded in February.

Chlorophyll *a* maxima were associated with mixed phytoplankton communities. The diatom *Cyclotella* spp. was common in the Sacramento River stations, and *Coscinodiscus* spp. was common in the San Joaquin River stations during April. Cryptonomads were also common among regions in May. Other species identified in the spring included the miscellaneous flagellates, *Skeletonema potamos* and *Thalassiosira eccentrica*. No common phytoplankton species were dominant among stations in the fall, and the species identified included *Aulacoseira granulata*, *Coscinodiscus* spp., *Cryptomonas* spp., *Cyclotella* spp., *Diatoma* spp., *Skeletonema potamos*, and miscellaneous flagellates.

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. Twenty stations are situated south of the Delta at reservoirs, pumping plants, powerplants, and check structures of the South Bay, Coastal Branch, and the California Aqueduct. Other monitoring activities are conducted on the 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. Over 60 different chemical constituents are monitored monthly, quarterly, or annually. In addition, automated stations are maintained for continuous monitoring of aqueduct water.

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

Selected SWP water quality data are available electronically through the Department Internet home page (http://wwwomwq.water.ca.gov) and reported monthly in the State Water Project Operations Data Report. Table 4-1 presents laboratory results of sampling at several representative stations during 1997.

Special Events During 1997

Oil Release in the California Aqueduct

On August 9, 1997, a small portion of the California Aqueduct liner slumped into the aqueduct at milepost 62.23 during dewatering for repairs upstream. Soon after, oil was discovered in aqueduct water. Investigations determined that the oil came from residual oil remaining in the soil following a 1984 Union Oil pipeline leak and cleanup. Staff from the Department's Civil Maintenance Branch and TOSCO Oil Company, who subsequently bought the pipeline, immediately placed absorbent booms in the aqueduct near the site of the slippage and in locations further downstream. After completion of emergency repairs, aqueduct flows resumed on August 14; the booms remained in place through 1997.

Daily water quality monitoring at three sites, two immediately adjacent to the site of the liner slump and a third site 1 mile downstream, began on August 11. Other surveillance stations were added

during cleanup efforts. Water samples were tested for purgeable organics and petroleum hydrocarbons.

The soil contaminated by oil was excavated and removed by TOSCO, and the surrounding groundwater was treated to remove any trace of oil. A physical barrier was installed adjacent to the aqueduct to prevent movement of groundwater into the aqueduct.

Water monitoring samples intermittently contained low levels of purgeable organics, below their maximum contamination levels, through August 20. However, a sample collected August 14 contained benzene at levels above the State's MCL. Monitoring for purgeable organics and petroleum hydrocarbons continued through October with no further detection.

MTBE Survey

MTBE (methyl tertiary-butyl ether) is a cleaner-burning fuel oxygenate that reduces smog-causing automobile emissions. The federal Clean Air Amendment of 1990 requires the use of oxygenated fuel in areas of air quality standard nonattainment. California adopted a secondary drinking water standard for MTBE of 5 µg/L, based on a conservative threshold for taste and odor. MTBE has been found in many groundwater basins, primarily from leaking underground fuel tanks. It has also been detected in reservoirs and lakes, where it was released from motorized boats, particularly from discharge of unburned fuel by inefficient two-stroke engines.

Between late April and mid-December, 130 samples were collected for MTBE analysis from 17 boat launch ramps at 10 SWP reservoirs. MTBE was detected in 80 percent of the samples. Most reservoirs had MTBE in every sample; exceptions were San Luis Reservoir, O'Neill Forebay, and Thermalito Afterbay. Where MTBE was detected, 63 percent of the samples had concentrations greater than 5 µg/L, the taste and odor threshold. MTBE levels were highest in the four Southern California reservoirs (Pyramid, Castaic, Silverwood, and Perris lakes) where 82 percent of the samples had MTBE concentrations greater than 5 µg/L and 60 percent greater than 10 µg/L. Mean surface MTBE levels near boat ramps were greatest at Castaic and Perris lakes at 14 µg/L and 22 µg/L, respectively. Northern and Central California boat ramp mean values were 6 µg/L or less.

Additional SWP reservoir surface samples were collected from areas away from boat ramps. MTBE was detected in 76 percent of these reservoir surface samples and was highest in the four Southern California reservoirs, where it was detected in 94 percent of samples. Mean surface MTBE was highest at Castaic (12 µg/L) and Perris (14 µg/L) lakes.

In contrast, 39 percent of samples in northern and central SWP reservoirs were below detection. No surface samples from lakes Davis, Oroville, and Del Valle, San Luis Reservoir, or O'Neill Forebay had MTBE levels above 5 µg/L.

MTBE was measured before and after both Independence Day and Labor Day to assess the impact of holiday boating. The San Luis complex was not included because most samples were below detection level. MTBE increased over both holidays at all boat ramp stations and was higher by 1 µg/L in more than 71 percent of the samples. Mean MTBE in all boat ramps' samples increased by 2.9 µg/L and 3.3 µg/L following July 4 and Labor Day holidays, respectively. In general, MTBE levels in SWP reservoirs reflect the relative amount of boating traffic.

Municipal Water Quality Investigations Program

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

Participants in the program include Contra Costa Water District and the municipal water contractors of the SWP. Program advisors include representatives of participating agencies, including the Environmental Protection Agency, California Department of

Table 4-1
1997 Water Quality at Selected State Water Project Locations

Constituents	Units	Report Limit < than	Thermalito Afterbay Outlet to Feather River mean	North Bay Aqueduct Barker Slough Pumping Plant mean	Banks Pumping Plant mean	Delta-Mendota Canal Upstream McCabe RD mean	California Aqueduct at O'Neill (Check 13) mean	Kettleman City (Check 21) mean	Highway 119 (Check 29) mean	Tehachapi Afterbay (Check 41) mean	Devil Canyon near San Bernardino mean	Article 19 Objectives Month/10 Year Average or Minimum
Alkalinity	mg/L	1	34	104	61	67	67	68	64	67	76	-
Arsenic	mg/L	0.001	<0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.05 max
Boron	mg/L	0.1	< 0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	-
Bromide	mg/L	0.01	<0.01 [a]	0.06	0.17	0.17	0.17	0.19 [a]	NR	0.17 [b]	0.13	-
Calcium	mg/L	1	7	17	16	20	18	18	17	17.5	19	-
Carbon-Total Organic	mg/L	0.1	NR	7.7	3.6	3.6	3.4	3.3 [a]	NR	3.4 [b]	3.1 [b]	-
Chlorides	mg/L	1	1	21	51	52	55	55	49	52	41	110/55
Chromium	mg/L	0.005	< 0.005	0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	-
Copper	mg/L	0.001	0.003	0.004	0.008	0.004	0.004	0.004	0.004	0.004	0.004	3 max
Fluoride	mg/L	0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.1	0.1	1.5 max
Hardness	mg/L	1	29	101	81	92	88	90	81	85	86	180/110
Iron	mg/L	0.005	0.010	0.031	0.013	0.013	0.014	0.009	0.011	0.008	0.006	-
Lead	mg/L	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	-
Magnesium	mg/L	1	3	14	10	11	10	11	9	10	9	125 max
Manganese	mg/L	0.005	0.006	0.022	0.020	0.008	0.009	< 0.005	< 0.005	< 0.005	0.022	-
Nitrate + Nitrite	mg/L	0.01	0.02	0.32	0.54	NR	NR	NR	NR	0.56	0.45	-
Phosphorus - Ortho	mg/L	0.01	< 0.01	0.10	0.07	NR	NR	NR	NR	0.07	0.06	-
Phosphorus - Total	mg/L	0.01	0.04	0.22	0.11	NR	NR	NR	NR	0.13	0.09	-
Selenium	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.05 max
Sodium	mg/L	1	3	26	39	42	43	43	38	41	35	50/40
Specific Conductance	µS/cm	1	71	317	360	392	387	392	350	373	343	-
Sulfate	mg/L	1	2	24	29	39	33	35	28	30	27	110/20
Total Dissolved Solids	mg/L	1	49	186	199	222	211	220	197	209	192	440/220
Trihalomethane Formation Potential	µg/L	10	NR	835 [b]	485 [b]	463 [b]	500 [b]	464 [c]	422 [b]	408 [d]	372 [b]	-
Turbidity	NTU	1	24 [d]	57	11	17	10	12 [b]	14 [b]	24	9 [e]	-
Zinc	mg/L	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	< 0.005	15 max

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

NR = data not collected or recorded at this location

[a] Mean based on only 5 months.

[b] Mean based on only 11 months.

[c] Mean based on only 4 months.

[d] Mean based on only 10 months.

[e] Mean based on only 9 months.

Health Services, and California Urban Water Agencies. Because water quality concerns change rapidly with new drinking water regulations and water quality issues, the MWQI program must be flexible enough to adapt to changing requirements. The former Delta Health Aspects Monitoring and Delta Island Drainage Investigations programs merged into the MWQI program in 1990; the program continues to evolve.

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

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

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

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

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

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

Other components of the MWQI program include:

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

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

Bryte Chemical Laboratory

Bryte Chemical Laboratory, established in 1951, continues to perform the majority of chemical and other related analyses requested to support the Department's water quality programs. Thousands of water samples are analyzed for minerals, nutrients, metals, pesticides, and other constituents. Bryte Laboratory continues to manage all analytical contracts with outside laboratories according to the Master Contract Policy approved in fiscal year 1994-95. The laboratory is working with the Quality Assurance/Quality Control Section to replace several contracts that will expire in fiscal year 1998-99.

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

The laboratory purchased two analytical instrument systems during 1997 to modernize and expand the laboratory's analytical capabilities. The two new analytical instrument systems purchased involve sample preparation. The new automated Solid Phase Extraction System will replace a very labor-intensive manual extraction method used to prepare samples for organic analysis. This new system will not only reduce labor costs because it is automated, but will also reduce solvent consumption used in the extraction procedures by 80 to 90 percent. These savings in labor and reagent costs will ultimately reduce the cost of the organic analyses performed.

The Field and Laboratory Information Management System was implemented during 1997. This system allows electronic transfer of samples for analysis to the laboratory, thus simplifying the transfer process. It provides users with information on all analytical services available through Bryte Laboratory, including costs. It also provides users with sample requirements for each analysis requested, such as types of containers needed, sample volumes necessary, and the type of sample preservation required. The new system is designed to store all current analytical data, including all required Quality Assurance/Quality Control data pertaining to sample analysis. It is designed to log, track, and assign sample analyses to the appropriate chemist in the laboratory. FLIMS will generate the final reports to the requestor in hard copy and, if required, in electronic format. The implementation and beta testing of FLIMS was completed at the end of calendar year 1997, with full implementation planned by early 1998.

Quality Assurance/Quality Control

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

In previous years, two different QA/QC training courses were developed and presented: *Data Quality Assessment, Evaluation, and Management* and *Introduction to Quality Assurance/Quality Control in Water Quality Programs*. In addition, several QA/QC technical documents were published.

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.

In 1997, several QA/QC technical documents were updated:

- *Quality Assurance Guidelines for Analytical Laboratories;*
- *Compilation of Federal and State Drinking Water Standards and Criteria;*
- *Compendium of Water Quality Investigations in the Sacramento-San Joaquin Delta;* and
- *Guidelines for Preparing Quality Assurance Project Plans.*

In addition, new technical documents are being developed:

- *Municipal Water Quality Investigations Program Quality Assurance Project Plan;*
- *Bryte Chemical Laboratory Quality Assurance/ Quality Control Manual;* and
- *Quality Assurance Management Plan for Environmental Monitoring Programs.*

The QA/QC program staff presented a highly requested course, *Introduction to Quality Assurance/ Quality Control in Water Quality Programs,* in April and May 1997. Employees of other agencies could attend on a space-available basis.

Following implementation of the Master Contract Policy, the QA/QC program assumed an active role to ensure that all in-house and contract laboratories providing analytical services for the Department comply with QA/QC procedures, standards, and requirements. The QA/QC program:

- conducted on-site surveys and audits of operations at in-house and contract laboratories;
- attended DHS certification review surveys of in-house laboratories;
- periodically submitted performance evaluation samples to all in-house and contract laboratories to evaluate their performance;
- implemented a QA/QC review process for all incoming environmental data for programs within the Water Quality Assessment Branch of the Division of Planning and Local Assistance;
- continued planning for the Department-wide Field and Laboratory Information Management System for storage, retrieval, and analysis of QA/QC and environmental data; and
- implemented a smaller parallel electronic database system within the WQA Branch to create and maintain a database of environmental 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 the Division of Planning and Local Assistance, Division of Operations and Maintenance, 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, an online real-time total organic carbon autoanalyzer, and fecal coliform analyses using a chromogenic substrate test system.

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 (Figure 4-2). In addition, the marsh is the resting and feeding ground for thousands of waterfowl migrating on the Pacific Flyway.

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

Suisun Marsh Preservation Agreement Activities

Amending the Suisun Marsh Preservation Agreement. In September 1995, USBR, the Department, DFG, and SRCD began negotiating to update the Suisun Marsh Preservation Agreement. The objective of SMPA is to assure that USBR and the Department mitigate for adverse effects on the marsh of CVP and SWP operations, as well as a portion of the adverse effects of other upstream diversions. This mitigation is accomplished by maintaining adequate salinity within Suisun Marsh channels on a dependable basis. In 1997, the agencies agreed in principle on provisions of SMPA Amendment Three.

To help meet interior marsh water quantity/quality needs, the Department and USBR constructed the Initial Facilities and the Suisun Marsh Salinity Control Gates. The four parties agreed that additional large-scale facilities as previously envisioned are not necessary for salinity control in the Suisun Marsh because of the greater-than-anticipated effectiveness of the gates and the higher outflows resulting from the 1995 Water Quality Control Plan. Instead of large-scale facilities, the parties identified several management actions to improve water and habitat management, maintain soil salinity on managed wetlands, especially in the western Marsh, and provide funds for wetland management in response to prolonged drought conditions. During 1997, specific actions included in Amendment Three were revised to include:

- meeting channel water salinity standards in WR Order 95-6;
- converting S-35 and S-97 from compliance stations to monitoring stations;
- setting criteria for operating the Suisun Marsh Salinity Control Gates in September;
- implementing the Water Manager Program;
- updating existing management plans;
- implementing the Joint-Use Facilities Program;
- managing Wetland Improvement Funds;
- installing portable diversion pumps with fish screens;

- installing portable drainage pumps;
- realigning and stabilizing Roaring River Distribution System turnouts; and
- establishing the Drought Response Fund.

During 1997, significant progress was made toward completing the environmental review process for SMPA Amendment Three. An environmental documentation team, comprised of representatives from each of the four SMPA agencies, prepared an administrative draft of a joint *Environmental Assessment/ Initial Study* describing the proposed actions and assessing potential impacts of implementation. The draft was reviewed under informal consultation by the fish/wildlife agencies. The four parties expect to release the EA/IS for public review in April 1998, with a Finding of No Significant Impact/Negative Declaration. Implementation of the SMPA Amendment Three actions would follow consultation with USFWS.

Comprehensive Suisun Marsh Data Review. The Suisun Marsh Preservation and Monitoring agreements require review of the data collected by the monitoring program. Data have been collected since 1985, including specific conductance of channel water, pond water and soil water, pond stage, vegetation occurrence and production, waterfowl surveys, fish abundance and distribution, and salt marsh harvest mouse presence. Data review began in spring 1996, and an ad hoc technical team was established with representatives from the Department, DFG, and SRCD to conduct this review.

During 1997, significant progress was made in evaluating the relationships between the specific conductance of applied water, pond water, soil water, and vegetation occurrence. A draft report is expected to be completed by mid-1998. The Suisun Marsh monitoring program will be updated, as needed, based on the findings and recommendations of the Comprehensive Review Team.

Individual Ownership Cost Share Program. The Individual Ownership Cost Share Program is a component of SMPA designed to improve water management on private ownerships within the Suisun Marsh. Funded improvements include replacing, lowering and/or enlarging drainage structures, and purchasing pumps to assist drainage. The program began in 1987 with a 50 percent reimbursement by the Department and USBR; however, participation in the program has greatly increased since 1994 when the Suisun Marsh Coordinators increased departmental and USBR cost share reimbursement to 75 percent.

During 1997, eleven applications for improvements were submitted and paid. The total cost of these improvements was $265,230, of which $208,868 was paid to SRCD and distributed to the landowners. The

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 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, declared operational November 22, 1989.

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 Order 95-6 and will place more emphasis on improving water and land management practices and facilities on managed wetlands.

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

Department and USBR have spent $1,152,303 since the program began in 1987; $167,697 remain in the fund.

Lower Joice Island Water Intake Fish Screen. In 1997, the Department installed a 12-foot-diameter conical fish screen on the Montezuma Slough intake to private ownership number 424 on Lower Joice Island. This intake was constructed in 1990, and permit conditions required that a fish screen be installed. The installation of mitigation facilities for the Cygnus and Lower Joice Island unit is described in the 1991 Progress Report, *Implementation of Suisun Marsh Mitigation Facilities*.

The design of the Lower Joice Island fish screen is similar to the other screens installed as part of the Suisun Marsh Diversion Screening Program. Once screen operations are tested and approved, ownership and maintenance responsibility will be transferred to the Lower Joice landowners. The total construction and installation cost of the Lower Joice Island Fish Screen was $403,400.

Initial Facilities Maintenance

Initial facilities listed in SMPA include the Morrow Island Distribution System, Roaring River Distribution System, and Goodyear Slough Outfall Structure. These facilities are described in the Plan of Protection for the Suisun Marsh (see sidebar), to mitigate, in part, for effects on the Suisun Marsh caused by the CVP and SWP. In addition to routine maintenance conducted on the three facilities, the Department also conducted the following activities during 1997.

Morrow Island Distribution System. The Morrow Island Distribution System was constructed in 1980 and consists of two ditches—M-line and C-line—which connect Goodyear Slough to Suisun Slough and Grizzly Bay through Morrow Island. The distribution system allows less saline water from Goodyear Slough to be tidally pumped as needed to flood the eastern side of Morrow Island.

The proposed maintenance includes removing accumulated sediment from the distribution ditch to restore adequate capacity and flows, using the dredge material to rebuild the levees to their original design

Plan of Protection for Suisun Marsh

The Plan of Protection for Suisun Marsh, published under the requirements of Decision 1485, was designed to ensure that Decision 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.

At USBR's request, SWRCB reset the timetable to comply with the conditions in Decision 1485 from a completion date of October 1, 1984, to a staged implementation plan to be completed by October 1, 1997. The revised time schedule was specified in a letter issued on December 5, 1985, and specific revisions were made to Table II of Decision 1485. The revision also includes options for compliance times and locations for salinity compliance stations.

The Plan of Protection suggests six phases to provide protection 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 with SMSCG operation and departmental model studies conducted in support of the 1995 Bay-Delta Plan and EIR for its implementation as described in this section.

elevation, and replacing the outlet culverts on C-line and M-line. A portion of the maintenance was completed in 1996, including replacement of the C-line outfall.

In 1997, departmental staff completed acquisition of all environmental permits required for maintenance work. An Environmental Compliance Advisory Team was formed to ensure that all terms and conditions of the permits are fulfilled. Most of the planned work was accomplished, including dredging of M-line and C-line ditches and excavation and replacement of the M-line outfall.

Remaining work to be accomplished in 1998 includes rebuilding levees and resurfacing roadways with gravel, installing the M-line outfall slide gates, constructing a timber walkway, and installing fish screens on the MIDS intake on Goodyear Slough. The fish screens are required under USFWS Terms and Conditions for the project, and are expected to be installed in the summer of 1999.

In addition to the above, 57 acres of pickleweed mitigation land is required to replace 19 acres of lost salt marsh harvest mouse habitat. Location of the mitigation land is expected to be identified by spring 1998.

Roaring River Distribution System. 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. The screens at the Roaring River intakes were originally designed for an average approach velocity of 0.5 feet per second. (Design approach velocity is the design flow divided by the screen area.) However, the fish screen criteria for USFWS is 0.2 fps approach velocity for the protection of delta smelt. The Department's Operations and Maintenance and Suisun Marsh Planning staff determined that the 0.2 fps approach velocity could be attained by automating the intake slide gates.

In 1997, departmental staff implemented a procedure for automating the slide gates on the eight intake culverts of the Distribution System. The automation is required to maintain the 0.2 fps fish screen criteria, while providing more water to DFG and private wetland managers.

In October 1997, during a routine inspection, erosion below the Roaring River Distribution System's intake fish screens was identified. Departmental staff began the process of completing all the environmental documentation and obtaining the necessary permits to repair the erosion. It is anticipated that the work will be completed in spring 1998.

Suisun Ecological Workgroup

The Department convened the Suisun Ecological Workgroup in May 1995 at the request of SWRCB in the 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary and WR Order 95-6. SEW is a technical group established to review the scientific basis of the current channel water salinity standards in the Suisun Marsh and to make recommendations to SWRCB regarding current and future water quality objectives.

SEW includes representatives from the Department, DFG, USFWS, National Marine Fisheries Service, USBR, U.S. Environmental Protection Agency, San Francisco Regional Water Quality Control Board, San Francisco Bay Conservation and Development Commission, California Native Plant Society, SRCD, Ducks Unlimited, California Waterfowl Association, San Francisco Estuary Institute, and the Metropolitan Water District of Southern California, among others. In October 1995, five technical subcommittees were formed focusing on brackish marsh vegetation, waterfowl habitat, wildlife, aquatic habitat, and hydrodynamics and water quality.

In 1997, SEW met monthly from February through August, then bimonthly beginning in November. Most activity continued in the technical subcommittees, with SEW serving to review and comment on subcommittee work. The aim of the subcommittee work was to evaluate the effects of the SWRCB Western Marsh Salinity Standards (1995 WQCP and WR Order 95-6) on various resources and to develop recommendations for resource-specific water quality objectives, future studies, and compliance monitoring reports.

In September 1997, SEW completed an interim report for the SWRCB. The interim report is a compilation of the work to date, consisting of status reports from each subcommittee. No conclusions or recommendations were included in the report, as they will be developed by the entire group based on the discoveries from each of the subcommittees. The interim report is available on the SEW homepage at http://iep.water.ca.gov/suisun_eco_workgroup/workplan/swrcb_report.html.

SEW's next step will be to integrate the subcommittee's work, develop appropriate objectives, and identify future research studies and monitoring needs. SEW plans to present its recommendations to SWRCB by October 1998.

Acid-Water Study

In 1995, an agreement was made between SRCD, the Department, USBR, DFG, the National Biological Service (now the Biological Resources Division of the U. S. Geological Survey), and the California Waterfowl Association to fund a study evaluating the extent, duration, distribution, and quality of acid/red water, and its effect on waterfowl usage in the marsh.

In 1997, SRCD staff prepared a report of the 1996 fieldwork. Use of orange/red-hued water by wintering waterfowl was aerially monitored in the marsh and examined in an experimental pen study. The water chemistry (pH, specific conductance) and physical characteristics (surface area, depth, turbidity, color) of orange/red-hued water and other colored (non-orange/red) water in the marsh were measured. Based on the results obtained from the first year of the study, no evidence was found to suggest that ducks avoid orange/red-hued water. A report is expected by the end of 1998.

Fisheries Monitoring

The University of California at Davis has sampled for fish in the Suisun Marsh since 1979, with Department and USBR funding. In 1997, sampling continued as in previous years.

Data from the sampling indicate a continuation in the long-term trend of declining abundance of fish in the marsh. The decline seems independent of Suisun March Salinity Control Gates operation. In 1996, researchers captured large numbers of delta and longfin smelt larvae, but less splittail larvae than in 1995. Because of the presence of eggs and larvae of delta smelt, longfin smelt, and splittail, it is likely that these species used the marsh for spawning and rearing in 1995 and 1996. Results from the 1997 sampling will be available by spring 1998.

DFG has monitored neomysis and phytoplankton densities in the marsh since the late 1970s. In 1996, neomysis and chlorophyll *a* sampling were conducted monthly throughout the year. Neomysis has been declining in the marsh since the 1970s, with the most dramatic decreases after 1991. In 1996, abundance was at low levels, but a peak in abundance occurred in June (the highest peak since 1976), followed by a crash in the population in July. The cause of the peak and subsequent crash is unknown. Overall, chlorophyll *a* concentration has decreased in the marsh since 1987. The decline has been attributed to the presence of the *P. amurensis* and decreases in freshwater flows. Construction and operation of the gates does not appear to have further decreased chlorophyll *a* levels. Results from the 1997 sampling will be available in mid-1998.

DFG biologists conducted striped bass egg and larvae sampling in Suisun Marsh from 1984 to 1988 and from 1993 to the present. From 1984 to 1988 (years before the gates were installed), striped bass eggs and larvae comprised 0.04 to 0.20 percent of the total eggs and larvae in the Delta. In 1993, abundance in Montezuma Slough composed 2.00 percent of total egg and larval abundance in the Delta. Samples from 1994 to 1997 are still being processed; the data are not yet available. Based on the limited data available, it appears that the gates are not affecting striped bass egg and larval development in Suisun Marsh.

DFG researchers also conduct sampling for juvenile striped bass, defined as fish of up to 38.1mm in length, in the marsh. In 1996, abundance in Montezuma Slough was similar to previous indexes in the last 10 years. Data from 1997 will be available in mid-1998. A gradual decrease in the average abundance has been observed in the Delta and Montezuma Slough since sampling began in 1959. Since the decrease has been relatively constant over the last 30 years, it is unlikely that changes in abundance were due to installation and operation of the gates.

Suisun Marsh Salinity Control Gate Activities

Suisun Marsh Salinity Control Gate Operation. The Suisun Marsh Salinity Control Gates are operated from September 1 to May 31, and only as needed to meet salinity standards and minimize fish concerns related to predation and impedance. To date, the scheduling of gate operation and the installation or removal of the flashboards have varied for several reasons: because of existing salinity conditions, at the request of the fisheries agencies for sensitive species concerns, or to allow for special studies and repairs.

As a result of increasing salinity in the marsh, the flashboards were installed and the gates were operational from November 13 to 26, 1996 (1996-97 control season). On November 27, gate operation stopped because salinity in the marsh was well below SWRCB standards. The gates remained open with the flashboards installed for the remainder of 1996. The flashboards were removed in February 1997.

During the 1997-98 control season, the gates were operated from October 14 through December 4, 1997. The gates remained open with the flashboards installed for the remainder of 1997.

Adult Salmon Migration Study. Studies to assess the effects of SMSCG operation on adult salmon migration were conducted in 1993 and 1994. The studies were done to fulfill a Corps permit requirement for the construction and operation of the gates. Adult salmon were captured using gill nets, and sonic tags were inserted into their stomachs. Stationary and mobile hydrophones and receivers tracked movement of each tagged salmon.

In 1996, the results of the 1993 and 1994 studies were published by DFG in the following reports:

- *Adult Salmon Migration Monitoring During the Various Operational Phases of the Suisun Marsh Salinity Control Gates in Montezuma Slough (August-October 1993)*; and
- *Adult Salmon Migration Monitoring During the Various Operational Phases of the Suisun Marsh Salinity Control Gates in Montezuma Slough (September-November 1994)*.

Results from the studies indicate that gate operation may have delayed and/or blocked upstream salmon migration and decreased the number of salmon passing through the structure.

In 1997, the Department also completed two white papers in response to the conclusions made by DFG in the Adult Salmon Migration Study. The *Salmon Population White Paper* discussed the results of the two adult salmon migration studies conducted by DFG at the gates, including various factors that can affect upstream migration of chinook salmon and upstream spawning areas. The paper presents time periods when chinook salmon may be present in Suisun Marsh and reviews hydrodynamic model results in Suisun Marsh and Suisun Bay to assess whether hydrodynamic factors could have an impact on salmon migration paths. Because of the many factors involved, the study could not determine whether the delay at the gates significantly affects upstream migration.

The other white paper, a companion to the salmon white paper, discussed possible mitigation options for salmon passage at the gates. The paper discusses six mitigation options for modifying flashboard and/or gate operation to minimize delay of adult salmon, while maintaining channel salinity below standards.

Both white papers were presented to the SMSCG Steering Group in September 1997 for review and discussion. The Steering Group is currently meeting once a month to develop recommendations to:

- minimize the delay/blockage for adult salmon at the gates while continuing to meet channel water salinity standards in Suisun Marsh, and;
- develop criteria and studies to test the effectiveness of the recommended measures.

Once the Steering Group has selected a method to minimize delay at the gates, the group will pass its recommendations to the Delta Salmon Project Work Team and the Suisun Marsh Preservation Agreement Coordinators for review. Final recommendations will be given to the Department and USBR.

Van Sickle Island Revegetation Monitoring. To install the gates in Montezuma Slough, about 70,000 cubic yards of material were excavated and

placed at Dredge Spoil Site No. 2 on Van Sickle by October 1988.

Permit conditions require an annual plant survey at the dredge spoil site for three growing seasons after the dredge material was dried and placed on adjacent levees (1994) to help determine the extent of reestablished salt marsh harvest mouse habitat. Under a departmental contract, a monitoring plan was prepared by DFG—*Monitoring Plan to Evaluate Habitat Recovery for the Salt Marsh Harvest Mouse at the Montezuma Slough Dredge Disposal Site on Van Sickle Island.*

In 1997, the third and final year of vegetation monitoring was completed. The monitoring indicated that all salt marsh harvest mouse habitat revegetation had taken place, with the exception of 2.2 acres. Mitigation is required for the 2.2 acres on a one-to-one basis. The mitigation site will be on DFG's Island Slough; however, final selection of the location will be completed in 1998. A final report is scheduled for completion by January 1998.

State Water Resources Control Board Activities

Water Quality Monitoring and Compliance. The Department's Environmental Services Office staff conducted SWRCB compliance monitoring within the Suisun Marsh during 1997 (Figure 4-2). During the 1996-97 control season, the salinity standards specified in SWRCB order WR 95-6 were in effect at four locations in the Suisun Marsh area. Three of these locations are within the marsh: National Steel (S-64), Beldons Landing (S-49), and Sunrise (S-21). One compliance location, Collinsville (C-2), is in the western Delta. During the 1997-98 control season, WR 95-6 standards went into effect at station S-42 (Volanti).

During winter 1997, specific conductance values measured in the marsh were low due to very high outflow conditions in the Delta and localized tributary runoff into Suisun Marsh. Specific conductance values remained below all salinity standards during 1997.

In 1997, one monitoring station was replaced and five other stations were repaired. In January 1997, station S-15 washed away with high floodwaters. The station housing was replaced in September. The station should be operational by spring 1998. Stations S-98, S-42, S-64, and S-35 underwent repairs ranging from stabilizing the tide well to replacing the station roof. In addition to the repairs, telemetry equipment was installed at monitoring stations S-42 and S-98.

In 1997, ESO continued monitoring flow at two tributary locations and three tidal locations in the marsh. Data collected at these locations are used to help understand hydrology, tidal, and other factors that can influence salinity levels within the marsh. In conjunction with modeling studies, these data are used to help determine alternative methods of salinity standards in the marsh during dry periods.

Monitoring was discontinued at stations S-20, S-34, and S-98, which were temporarily established for the Western Salinity Control Test.

Suisun Marsh Annual Data Summary Report. Data collected and analyzed in the Suisun Marsh during water year 1994 were reported in the *Suisun Marsh Monitoring Program Data Summary.* In this annual report, the Department presented results of studies and surveys in water year 1994 associated with:

- the SMSCG fishery impacts analysis;
- waterfowl food plant production;
- marsh-wide vegetation conditions;
- waterfowl populations;
- salt marsh harvest mouse population;
- channel salinities; and
- soil and pond water salinities on managed wetlands.

This report also discusses scheduled maintenance for departmentally-maintained mitigation facilities and monitoring program revisions.

Results for water years 1995 and 1996 will include a summary of data collected during the 1994-95 Western Suisun Marsh Salinity Control Test.

Suisun Marsh Technical Advisory Committee

During 1997, Department staff facilitated four Suisun Marsh technical advisory committee meetings. Meetings are scheduled quarterly to increase

staff time and resource efficiency. Representatives from federal, State, and local agencies and Suisun Marsh landowners attended the meetings. The meeting notes were distributed to more than 60 people.

Suisun Marsh Expenditure History

Table 4-2 summarizes Suisun Marsh expenditures and reimbursements administered by the Department for calendar years 1968 through 1997.

From 1968 through 1997, the Department disbursed over $80 million for planning, design, environmental documentation, construction, maintenance, monitoring, and permit compliance in support of implementing the Plan of Protection for the Suisun Marsh (see sidebar) and SMPA and to meet standards set by SWRCB. USBR has reimbursed the Department about $31.7 million (39.4 percent), and the California General Fund has reimbursed about $9.5 million (11.8 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 and cumulative expenditure balance, USBR reimbursements, and General Fund reimbursements.

Table 4-2
Suisun Marsh Expenditures and Reimbursements, as of December 31, 1997

Calendar Year	*Upfront Payment (Dollars)*	*USBR Reimbursement (Dollars)*	*General Fund Reimbursement (Dollars)*	*Cumulative Expenditure Balance (CXB) [a] (Dollars)*
1968	10,571	0	0	10,571
1969	34,182	0	0	44,753
1970	23,343	0	0	68,096
1971	1,042	0	0	69,138
1972	47	0	0	69,185
1973	0	0	0	69,185
1974	0	0	0	69,185
1975	2,709	0	0	71,894
1976	32,961	0	0	104,855
1977	37,475	0	0	142,331
1978	350,831	0	0	493,162
1979	3,660,096	0	0	4,153,258
1980	5,005,759	0	0	9,159,017
1981	2,964,977	0	0	12,123,995
1982	2,955,702	2,500,000	0	12,579,697
1983	2,754,091	0	0	15,333,788
1984	2,418,345	0	0	17,752,133
1985	2,332,776	0	0	20,084,909
1986	6,495,323	0	0	26,580,232
1987	13,600,701	0	0	40,180,933
1988	7,456,364	17,368,725 [b]	0	30,268,572
1989	2,341,843	1,219,691 [c]	9,478,000 [d]	21,912,724
1990	3,030,016	695,450	0	24,247,290
1991	6,222,531	2,925,429	0	27,544,392
1992	2,737,242	1,174,655	0	29,106,978
1993	2,979,254	238,130	0	31,848,102
1994	3,192,211	1,962,549	0	33,077,764
1995	2,721,197	647,138	0	35,151,839
1996	3,391,094	1,482,396	0	37,060,522
1997	3,631,783	1,520,219	0	39,172,086
Total	**80,384,468** [e]	**31,734,382** [e, f]	**9,478,000** [g]	**39,172,086** [h]

[a] CXB = (Previous Year's CXB + Departmental Upfront Payment) - (USBR + General Fund Reimbursements)

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

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

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

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

[f] USBR paid 39.4% of the total Departmental Upfront Payment.

[g] General Fund paid 11.8% of the total Departmental Upfront Payment.

[h] The Department paid 48.7% of the total Departmental Upfront Payment.

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

Chapter 5

Local Assistance Programs

Horses pulling a vehicle out of a muddy road. (Historical photo)

Significant Events

- Three major events occurred under the Department's water conservation programs: (1) the Urban Water Conservation Council revised the 1997 *Best Management Practices;* (2) the Department began an effort to update Bulletin 198, *Water Conservation in California;* and (3) the Agricultural Water Management Council was formed in November 1996. The Department is a signatory of the Memorandums of Understanding that created both councils, which are comprised largely of local water suppliers. In supporting them, the Department provides assistance to more than 140 agencies.

- The Department's California Irrigation Management Information System expanded to 94 weather stations in 1997 and current data was put on an Internet site. The Department provides "real-time" evapotranspiration information to 30 local agencies and receives more than 2,500 requests for CIMIS data each month.

- The passage of the Safe Clean Reliable Water Supply Act of 1996 provided funding for water conservation, groundwater recharge, new local water supply and local projects programs that assist local agencies, including State Water Project contractors.

- In late 1996, the San Joaquin Valley Drainage Implementation Program adopted an Action Plan that will update the 1990 Drainage Management Plan.

- The Department supported the American Water Works Association Research Foundation *Residential End Use Study* that indicates that existing water conservation measures can reduce interior water use from 74 to 51.9 gallons per capita per day. The study evaluated actual metered water use at thousands of homes in 12 North American communities (four in California) to accurately determine the per capita quantities of water used for eight purposes in single family residences. An analysis of the results is planned for 1998.

- The *Water Conservation News* was revived as the primary water conservation outreach newsletter. The quarterly publication reaches more than 8,000 California subscribers.

- Departmental support of the California Urban Water Conservation Council has resulted in technical research as well as increased membership to implement Best Management Practices for Urban Water Conservation.

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

Davis-Grunsky Act Program

The Davis-Grunsky Act, authorized in 1960 as part of the Burns-Porter Act, provides construction loans for local domestic water projects and agricultural water conservation projects. It provides grants for recreation and fish and wildlife enhancement. Loans and grants may also be given to rehabilitate a dam and reservoir. At the inception of the Davis-Grunsky Act Program, loans were made at the current market interest rate. In 1967, the Legislature fixed the interest rate at 2.5 percent to be more accessible for the low-income agencies that the program was designed to assist. The maximum loan repayment period was set at 50 years. At the Department's discretion, some agencies were given an initial 10-year deferment, with the accumulated interest amortized over the repayment period.

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

Current Activities

In this reporting period, the Davis-Grunsky Act Program funded the following agencies and activities.

Big Bear Municipal Water District. Phase II repairs of Bear Valley Dam, San Bernardino County, have been delayed because Caltrans has not constructed the required replacement road downstream of the dam. The $380,000 of Davis-Grunsky grant contract funds approved for Phase II construction remained available to the district.

Littlerock Creek Irrigation District/Palmdale Water District. The Department disbursed $2.7 million of the $3 million grant approved to repair this project in Los Angeles County. The recreational facilities associated with the project are complete. Project audit and subsequent release of the remaining $300,000 withheld is expected in the third quarter of 1998.

Agricultural Drainage Program

The Department continued to participate in the multiagency San Joaquin Valley Drainage Implementation Program. During December 1996, the program's Management Group approved in concept a "Proposed Action Plan," which was advanced by an association of local districts, the University of California, and the California Department of Food and Agriculture. The Proposed Action Plan will update the 1990 Management Plan and will be implemented in three stages.

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

During the second stage, an ad hoc Coordination Committee will synthesize the information from the

first stage into a report and, based on technical and economic considerations, identify interactions and trade-offs among management options and develop a set of recommendations. It is expected that the technical reports and area reports will be delivered to the ad hoc Coordination Committee by April 1999.

The third stage will use the recommendations formulated during the second stage, along with input from the public, to formulate an updated management plan and identify acceptable mechanisms that will encourage the adoption and voluntary implementation of the updated management plan.

The Department will participate in this effort at all stages, assist the subarea committees, and play a major role in drafting the technical committee reports. A data report for the Tulare Lake and Kern County subarea, compiled by the Department at the request of the Subarea Committee, was released in fall 1997.

Drainage Monitoring and Evaluation

The Department continues to participate in a cooperative program with the U.S. Bureau of Reclamation and the Central Valley Regional Water Quality Control Board. This information system provides local, State, and federal agencies with real-time and projected flow and salinity data to assist in managing drainage releases to the San Joaquin River. The initial funding for this program was supported by USBR. This funding agreement expired in June 1997. The program is now operated under a 2-year funding from CALFED.

The Department continues to monitor shallow groundwater levels and electrical conductivity data. An electrical conductivity map of shallow groundwater levels was included in the 1995/96 Drainage Monitoring Reports. The Department also continues to collect drainage water flow data and water quality data from about 30 tile drainage system sumps.

Drainage Reduction and Reuse

The Department continues to work on demonstration and education programs, promoting the practice of improved irrigation and drainage management techniques. The Department completed the following related reports:

- *Growth and Water Relations of Plant Species Suitable for Saline Drainage Water Reuse Systems;* and
- *Study of On-Farm Irrigation and Drainage Management on Cracking Soils to Reduce Drainage.*

An investigation of the *Role of Agroforestry System in Reducing Selenium Concentration in Drainage Water by Volatilization Process* was completed and a final report is due.

In addition, along with several other sponsors, the Drainage Reduction and Reuse Program sponsored advances in irrigation symposiums and workshops. Several presentations were made in areas such as irrigation systems technology and on-farm water and energy management.

Contracts were negotiated and work begun on the following projects:

- *Reduction of Drainage Pre-irrigation by Utilizing Sprinkler, Skip-row, and Alternate Furrow Irrigation in Cotton;*
- *Irrigation Management Education and Training Workshops;*
- *Educational Workshops for On-Farm Irrigation Management Advances for Source Reduction of Deep Percolation and Drainage;* and
- *Drain Water Reuse Agroforestry Trial.*

These projects are mainly in the SWP service area.

Drainage Treatment

The Department continues to investigate technologies to treat agricultural drainage water. The studies and testing at the multiagency Adams Avenue drainage treatment test have been completed. The principal activity was bacterial selenium reduction/removal tests, using anaerobic sludge blanket reactors, fluidized bed reactors, and a packed bed reactor. Slow sand filtration was evaluated as a final, polishing step. Operations ceased in November 1995. Cleanup of remaining salts and sediments at the Los Banos Demonstration Desalting is scheduled for completion in November 1998.

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

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

Evaporation Ponds

Operators of the agricultural evaporation ponds have implemented the waste-discharge requirements as adopted by the Central Valley Regional Water Quality Control Board in August 1994. Clean wetlands provide compensation for operation of the evaporation ponds; pond management for some systems have changed; and most required structural modifications have been completed at the evaporation basins. Most of these mitigation procedures were developed by researchers funded through the Department's Evaporation Pond Investigation. As required, the pond operators compiled draft progress reports for the last 3 years of implementation covering the efficacy of these mitigation procedures. The Department is assisting CVRWQCB in reviewing these reports (and any other required reports) for adequacy.

Petitions filed with the State Water Resources Control Board acted to strengthen the waste discharge requirements of CVRWQCB. SWRCB held hearings on these petitions and remanded the EIRs of four operators back to CVRWQCB for further environmental assessment. In response to SWRCB's decision, and with guidance from CVRWQCB, these four pond operators are rewriting their environmental impact reports on waste discharge permits. Several other pond operators reached agreement with the petitioners before SWRCB finished its hearings and were not required to rewrite their EIRs.

The Department continues to fund and coordinate research on the evaporation ponds. A study on the nesting success of shore birds, conducted by the Biological Resources Division of the U.S. Geological Survey and funded by the Department, was completed, although the final report has been delayed. Another study by the Biological Resource Division to study shorebird feeding behavior is underway and a progress report covering the first two seasons of operation is under preparation.

The Westlake Demonstration Wetland, a cooperative project of the Department, Westlake Farms, USBR, U.S. Fish and Wildlife Service, and the Department of Fish and Game, has been operating since fall 1994. Information collected by the Department, USFWS, and consultants to Westlake Farms documented a high level of successful breeding by shore birds. This information, valuable in the SWRCB proceedings discussed above, will help design shore bird wetlands throughout the western United States.

The Department drafted a report on a study that compares invertebrate productivity within the compensation wetlands and evaporation basins. This study will be useful to the evaporation pond operators and the regulatory agencies in assessing the usefulness of mitigation wetlands.

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

Environmental Impact Documents Review

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

Some environmental impact documents handled by the State Clearinghouse concern proposed activities that would affect the SWP. In 1989, an early warning system was developed by the Environmental Review Section, under which State Clearinghouse documents are regularly reviewed to identify any public safety or liability issues arising from the proposed activities.

In the first year of operation, 25 environmental documents significant to the SWP were reviewed. From October 1996 through December 1997, about 3,425 documents were screened by the Environmental Review section with 270 referred for detailed review. O&M received 49 of these referrals. The State Water Project Analysis Office received eight referrals, and the Office of State Water Project Planning received two. In addition to formal referrals, about 290 informal referrals were made to Department staff. These were documents referred to staff for information rather than comment, with some of the documents formally referred to other departmental staff.

Of the documents submitted for formal review, about 20 percent generated written comments submitted to the lead agency. These comments included safety and water supply issues, encroachment on physical facilities, and water quality issues. Additional Department actions involving such items as encroachment permit submittals and informal comments have taken place but cannot be tracked by the Environmental Review Section.

In December 1995, the weekly summary report on documents received from the State Clearinghouse became available by e-mail, increasing the report's availability and speed of distribution. About 200 requests from Department staff between October 1, 1996, and December 30, 1997, were related to the distribution of this document. In addition, Environmental Review staff filled six requests from SWP contractors.

Between October 1, 1996, and December 31, 1997, the Environmental Review Section tracked at least six documents relating to water transfers or exchanges involving SWP and other water supplies. These proposed agreements ranged from less than 10,000 acre-feet to more than 40,000 acre-feet with several projects not specifying amounts. The projects included conjunctive-use aspects and outright transfers of various durations.

Developments, such as Mountain House and Tracy Hills in San Joaquin County and Remington Properties and Joshua Ranch in Palmdale, were also tracked during this period. These developments were of concern because of potential impacts to SWP supplies and facilities.

Water Conservation Bond Laws

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

The Clean Water Bond Law of 1984 (Proposition 25) authorized $10.5 million for water conservation projects; the Water Conservation and Water Quality Bond Law of 1986 (Proposition 44) authorized $75 million for water conservation and groundwater recharge projects; the Water Conservation Bond Law of 1988 (Proposition 82) authorized $60 million for water conservation, groundwater recharge, and new local water supply improvements; the Safe, Clean, Reliable Water Supply Act authorized $55 million for water conservation, groundwater recharge, and local water supply projects.

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 also provided for grants for local water supply feasibility studies and a single construction grant for a groundwater recharge project. Among other approval criteria, applicants for this funding must demonstrate that project benefits exceed project costs. Typical projects fall under the following three categories:

Water Conservation

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

Groundwater Recharge

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

Local Water Supply/Local Projects

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

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

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

Bond Law	*Type of Project*	*Number of Projects* [a]	*Funding* [a]
Clean Water Bond Law of 1984	Water Conservation	7	9.70
Water Conservation/Water Quality Bond Law of 1986	Water Conservation	22	36.10
	Groundwater Recharge	10	28.00
	Subtotal	*32*	*64.10*
Water Conservation Bond Law of 1988	Water Conservation	6	13.50
	Groundwater Recharge	8	24.30
	Local Water Supply	4	9.00
	Subtotal	*18*	*46.80*
Safe, Clean, Reliable Water Supply Act	Water Conservation	0	0.00
	Groundwater Recharge	1	5.00
	Local Water Supply	1	0.15
	Subtotal	*2*	*5.15*
Subtotals	*All Water Conservation*	35	59.30
	All Groundwater Recharge	19	57.30
	All Local Water Supply	5	9.15
Total	**All Projects**	**59**	**125.75**

[a] Construction and feasibility loan commitments as of 12/31/97.

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

Chapter 6
Legislation and Litigation

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The California State Assembly
in session, April 26, 1927

Significant Events

- SB 1082 (Kelley) (Chapter 874, Statutes of 1997) This bill requires the Director of the Department of Water Resources to assist the Colorado River Board and six California water agencies that receive water from the Colorado River to develop a plan to ensure that California stays within its 4.4 million acre-feet annual entitlement from the Colorado River.

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

Legislation

SB 1082 (Kelley) (Chapter 874, Statutes of 1997)

This bill requires the Director of the Department of Water Resources to assist the Colorado River Board and six California water agencies that receive water from the Colorado River to develop a plan to ensure that California stays within its 4.4 million acre-feet annual entitlement from the Colorado River. This bill requires the Director to issue a recommendation, within 30 days of July 15, 1997, specifying terms and conditions of the transfer of water between San Diego County Water Authority and Metropolitan Water District of Southern California. If this recommendation is not acceptable to either party, the bill requires a formal mediation process.

Litigation

As of December 31, 1997, the Department was involved in a number of court cases related to management of the SWP. In addition, the Department monitored other cases that could significantly impact management of the SWP.

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

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

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

The Planning and Conservation League filed a lawsuit on December 27, 1995, against the Department and Central Coast Water Authority, challenging the Department's implementation of the Monterey Amendment. The lawsuit alleged that the Department and CCWA had not complied with the California Environmental Quality Act. 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. PCL sought an injunction to stop the transfer. The San Bernardino Valley Municipal Water District filed a cross-complaint opposing the Monterey Amendment.

After a hearing held May 17, 1996, a Sacramento County Superior Court judge ruled in favor of the Department and CCWA on PCL's complaint, and

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

As a result of the trial court's ruling, the Department proceeded to implement the Monterey Amendment, including transferring the KWB to KCWA. On August 20, 1996, PCL appealed the decision to the Third District Court of Appeal and sought a writ to prevent further implementation of the Monterey Amendment during the appeal. The Department and CCWA opposed the writ. The Court of Appeal denied the writ on September 26, 1996. On October 22, 1996, the Department and San Bernardino entered into an agreement dismissing the San Bernardino cross-complaint without prejudice.

On November 26, 1996, KCWA and other contractors moved to dismiss the appeal insofar as it related to the trial court's ruling on indispensable parties. The motion was based on PCL's failure to appeal the ruling in a timely manner. The Court of Appeal ruled in favor of KCWA and the other indispensable parties and dismissed the appeal against them. PCL petitioned the California Supreme Court for review on this procedural issue.

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

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

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

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

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

Petitioners then filed a petition for review with the California Supreme Court, seeking to invalidate the entire Mitigated Negative Declaration. On January 22, 1997, the California Supreme Court denied the petition for review, and jurisdiction was returned to the Superior Court. A hearing was held in San Bernardino Superior Court 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.

City of Barstow v. City of Adelanto

This action is a stream/groundwater adjudication for the Mojave River Basin. The Department was named in a cross-complaint by the City of Adelanto. Adelanto alleged that the Department should be making additional releases of water, pursuant to Fish and Game Code Section 5937, for fish populations below

Silverwood Lake. The Department's position is that there is no legal support for application of Section 5937 to imported water.

The Department claims no rights to the Mojave River. However, pursuant to an agreement with Las Flores Ranch, the Department provides water to the ranch through the Mojave Siphon based on flows of tributaries into Silverwood Lake. The original diversion works of Las Flores Ranch were rendered unusable by the construction of Cedar Springs Dam and Silverwood Lake. The cross-complaint against the Department was dismissed with prejudice in summer 1995.

The groundwater adjudication portion of the litigation, to which the Department is not a party, is still pending.

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

Chapter 7

Storage and Delivery Capabilities and Water Supply Development

Water release in aqueduct at
Avenal Gap Siphon (1968)

Significant Events

- Initial testing of the Coastal Branch, Phase II system began in October 1996. Full operation began in August 1997. Phase II provides water service to Santa Barbara and San Luis Obispo counties.

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, planning and developing new facilities present two significant challenges: (1) finding technically suitable projects; and (2) satisfying many complex environmental procedures, laws, and regulations. Many environmental concerns center on the effects that additional storage and delivery facilities may have on the water quality and environment of the Sacramento-San Joaquin Delta. The Delta is the critical link in the SWP conveyance system. As such, developing additional SWP facilities depends on resolution of Delta conflicts and solutions being outlined by CALFED.

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

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

SWP Planning Strategy

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

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

Supply Reliability Activities

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

Transfer and Sales Evaluations

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

The Department also explored potential transfer options available to the SWP and individual contractors. Analysis of contractor profiles helped the Department facilitate transfers and exchanges between individual contractors. In addition, coordination of departmental participation on the CALFED Transfer Agency Group and the Bay Delta Advisory Committee Transfers Workgroup was part of this activity.

Water Supply Contract Evaluation

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

Contractor Profiles

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

Assurance Demonstration Project

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

Watershed Management

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

Coastal Branch Delivery Facilities

Phase I and II

In keeping with the Department's efforts to have appropriate water delivery facilities in place to meet demands, the Coastal Branch of the California Aqueduct was planned, designed, and constructed in two phases. The first phase was completed in the late 1960s and delivers water for agricultural use to contractors in northwestern Kern County. Phase I facilities include two pumping plants and a 14.8-mile coastal stub canal extending from Avenal Gap to the vicinity of Devil's Den in northwestern Kern County. Berrenda Mesa Water District, a member of Kern County Water Agency, and Castaic Lake Water Agency (formerly Devil's Den Water District), receive water through the Phase I facilities. The second phase became operational in mid-1997 and delivers water for municipal and industrial use to Santa Barbara County Flood Control and Water Conservation District and San Luis Obispo County Flood Control and Water Conservation District.

Phase II Construction

The Phase II project was divided into six construction reaches. In early 1994, the Department began acquiring rights of way and obtaining the permits necessary to construct the project and began construction of the first two reaches. Four addenda and one supplement to the final EIR were prepared to

document changes in the project. With the implementation of mitigation plans, the construction of the project resulted in no significant long-term impacts. All significant impacts were short-term and were associated with construction (traffic, noise, and air quality) activities. A legal challenge to the adequacy of the supplement to the EIR was resolved in favor of the Department.

Phase II construction involved laying 100 miles of buried pipe from the existing Phase I terminus near Devil's Den to the end of Reach 6 at Vandenberg Air Force Base. Other facilities constructed include Devil's Den, Bluestone, and Polonio Pass pumping plants, and three water-storage facilities. The three tank facilities provide hydraulic stability and control in operating the project. A regional water treatment plant, owned and operated by the local water purveyor (Central Coast Water Authority), was constructed at Tank Site 1 at Polonio Pass. The Department contracted with CCWA to construct Reaches 5B and 6 to ensure timely completion of the entire project. By October 1996, most construction of all major facilities in the six reaches of the project was completed and most facilities were operational. Only minor construction items remained—installation of the fiber optic cable in Reach 5, construction punch list items, and testing the pumps and control systems. In July 1997, CCWA began filling and disinfecting the pipeline downstream of their Polonio Pass Water Treatment Plant. In August 1997, Phase II facilities testing was completed and commercial operation began with delivery of treated SWP water to Santa Barbara and San Luis Obispo counties. Throughout the rest of 1997 and into 1998, the Division of Engineering worked on resolving construction claims and closing out construction contracts. Minor field activities continued such as correcting erosion problems, resolving landowner problems, and implementing mitigation items.

Water Supply Development

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

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 the CVP contractors;
- establishing conjunctive-use programs; and
- using SWP funds to develop local water supplies.

Supplemental Water Acquisitions

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

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.

leaving only reservoir storage as a possible source of water under this program. The Department continues efforts to advance the remainder of the program.

State Water Project Conveyance

The Department arranges for the temporary transfer of water through SWP facilities for SWP long-term contractors as well as for other agencies. Those transfers can take three forms: (1) water exchanges among SWP long-term contractors or among contractors and

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]) compel 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 only 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.

non-SWP contracting entities, (2) entitlement water transfers between long-term SWP contractors; or (3) transfers of nonproject water to non-SWP and SWP agencies.

CALFED Bay-Delta Program-Water Transfer Program

The Department actively participates in the formulation of CALFED's Water Transfer Program through the Bay-Delta Advisory Council Water Transfer Work Group and the Transfers Agency Group. The program proposes a framework of actions, policies, and processes to facilitate water transfers and further develop a statewide water transfer market. The program document will describe the relationship of water transfers to other water management actions and programs, discuss existing laws and statutes, and identify issues and problems related to transfers. The

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.

document will also make recommendations to resolve these issues and suggest strategies to implement these recommendations. The Water Transfer Program is one of eight program elements being developed for CALFED's Bay-Delta Program Programmatic EIR/EIS.

Conjunctive-Use Program

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

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

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

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

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

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

Lower Colusa Basin. The Department completed a prefeasibility investigation of the conjunctive-use potential in the Lower Colusa Basin in northern Yolo and southern Colusa counties in July 1997. The local cooperators in this investigation are Reclamation District No. 108, Colusa County Water District, and Yolo-Zamora Water District. The proposed project would develop up to 34,000 acre-feet of dry-year supply for the SWP while helping alleviate problems resulting from land subsidence in the project area. Recharge would be accomplished through the development of conveyance facilities to deliver surface water to Yolo-Zamora and/or Colusa County Water District in wet years. In dry years, RD-108 would

pump previously stored groundwater as part of its supply and release an equivalent amount of surface water to the SWP. The prefeasibility investigation identified significant gaps in our knowledge of the groundwater system in RD-108, and subsequent work has focused on implementing an exploration program and developing a monitoring system to gather the more detailed information needed for an anticipated feasibility study.

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

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

Local Water Supply Projects

Local projects to augment water supply may be financed with SWP funds and become units of the

Central Valley Project Improvement Act of 1992

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

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

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

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

SWP if the Department determines that the projects are structurally, economically, financially, and contractually feasible as well as environmentally acceptable. SWP contractors benefit from increased water supplies or reduced demands resulting from the projects.

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

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

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

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

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

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

Lake Del Valle and dam

Significant Events

- On December 2, 1996, the Department approved delivery of 2,418,080 acre-feet of the 2,976,606 acre-feet requested entitlement water for long-term State Water Project contractors for 1997. SWP supplies were projected to meet at least 70 percent of most SWP contractors' requests.

- A series of storms throughout December 1996 provided three-and-a-half times the average precipitation for the month and resulted in large flood releases throughout the Sacramento system. This led to the record flood flows in early January 1997.

- On February 11, 1997, updated water supply information prompted the Department to increase the approvals to 100 percent. A total 2,976,606 acre-feet was approved.

- On December 1, 1997, the Department made an initial approval of 1.6 million acre-feet of the 3.3 million acre-feet of requested entitlement water for long-term SWP contractors in 1998. SWP supplies were projected to meet at least 40 percent of most SWP contractors' requests.

- Actual SWP water deliveries for calendar year 1997 were 2.4 million acre-feet, representing a combination of annual entitlement and other water. Other water is defined as purchase pool, general wheeling, transfer, exchange, Central Valley Project exchange, recreation, flood-related, and flexible storage withdrawal waters. This actual amount is approximately 55,000 acre-feet less than delivered during 1996.

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 1996-97

Precipitation

Water year 1996-97 was the third wet year in a row and resulted in the largest inflows this century at many Central Valley foothill reservoirs including Oroville. The year started slightly wetter than average in the fall of 1996, particularly November. December was a very wet month with more than twice the monthly average precipitation by December 25. These earlier rains and a holiday snowstorm in the Sierra saturated and primed the mountain watersheds. Then came the deluge over the New Year holiday, which produced record flood flows in most of the major rivers in the Central Valley. Lake Oroville inflow peaked slightly over 300,000 cfs, exceeding the previous peak of about 266,000 cfs in February 1986.

After the New Year's floods, there was about a 3-week break with little rain. This break allowed for recovery of flood control space in Sacramento Basin reservoirs and time to make partial emergency repair of the two large levee breaks on the Feather River and the Sutter Bypass. During the break, only partial restoration of reservoir flood control space was achieved in the San Joaquin River Basin, where downstream channel capacity is only about one-tenth that of the Sacramento River system. A new series of storms developed in late January. The second series was not as intense, but cooler, which meant more precipitation in the mountains fell as snow. The second flood wave was easily handled by Sacramento River region reservoirs and stayed within the capacity of the partly restored levees at the two major Sacramento River basin break sites. The San Joaquin River region situation was more critical, but reservoir flood control operation was successful in preventing new levee breaks during the second storm event.

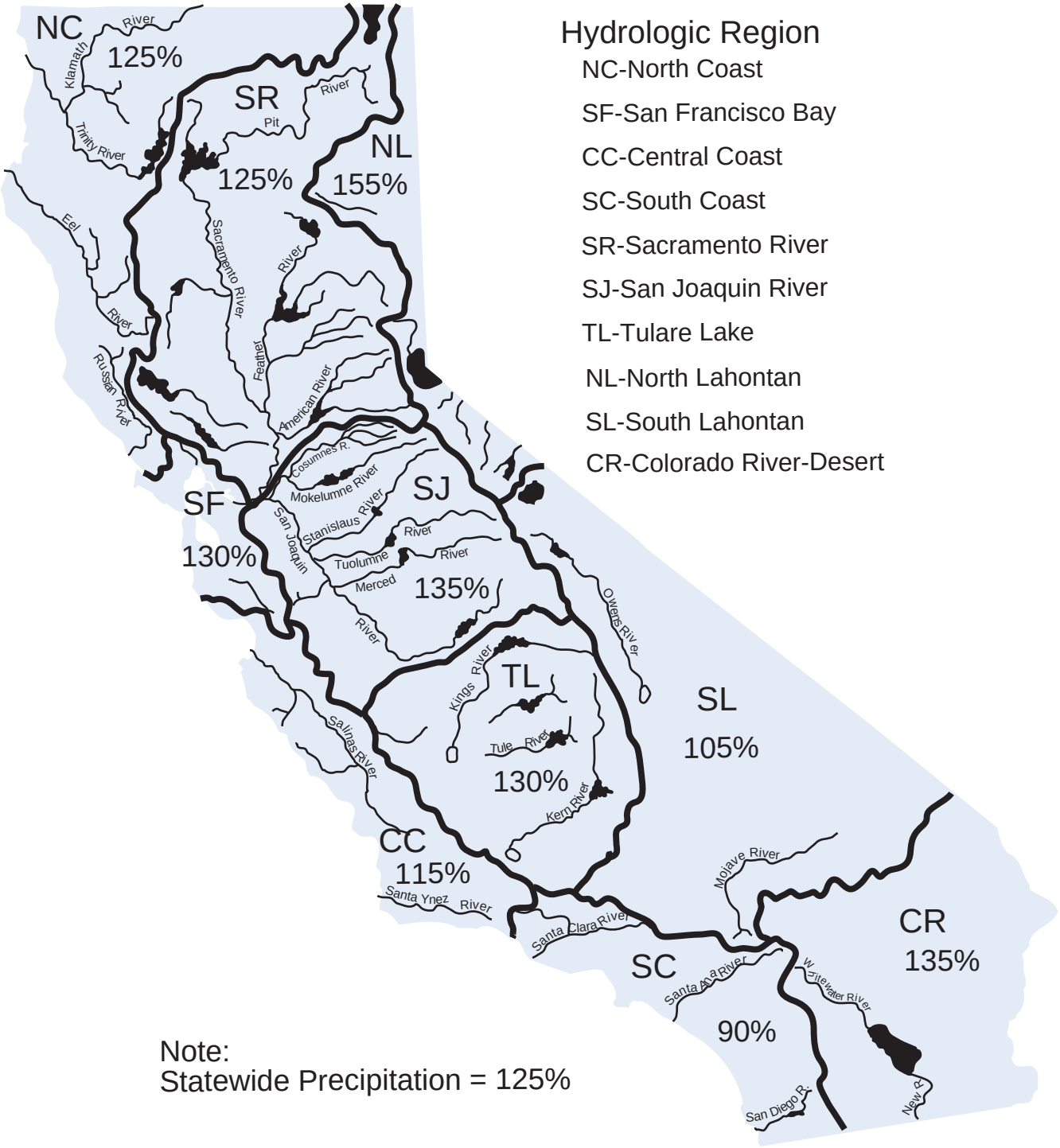
After an extremely wet December and January, the season became one of the driest of record for the remainder of the rainy season—February through May. The northern Sierra had only 6.3 inches during that 4-month period, compared to a normal of almost 21 inches. This was the driest late winter and spring period of record in 76 years. The April 1 snowpack was 75 percent of average, in spite of some generous amounts from the winter storms at higher elevations. April through July Feather River snowmelt runoff was about 1.1 million acre-feet, only 61 percent of average.

As sometimes happens, June precipitation was more than twice average, but the amount was still low and had little effect on runoff. The remaining 3 months of the water year, July through September, were near normal, and accounted for only 2 percent of annual precipitation in Northern California.

Statewide precipitation for the water year, October 1996 through September 1997, was about 125 percent of average. Figure 8-1 shows statewide precipitation by hydrologic region.

October through December 1997 marked the first 3 months of the 1997-98 water year. It was the year of a strong El Niño, the periodic warming of the eastern tropical Pacific Ocean surface with corresponding effects around the world. Eventually California would be wet, but the October through December period was not far from average in precipitation. November was above average, but December was well below average. Seasonal runoff, which was

Figure 8-1
Statewide Precipitation by Hydrologic Region, 1996-97 Water Year, in Percentage of Average



almost normal during the fall, failed to increase at the normal pace during December, because of its dryness, and stood at around two-thirds of average for the 3-month period on December 31, 1997. As the calendar year ended, the statewide snowpack was about 75 percent of average for the date.

Runoff

Statewide runoff was about 145 percent of average for water year 1996-97, compared to nearly 125 percent the previous year. A very large portion occurred during late December and January, much during the flood events.

Snowmelt runoff was less than average. April through July runoff was 65 percent of average in the Sacramento River region, and around 95 percent in the San Joaquin River region, where higher elevations kept some of the flood-producing precipitation as snow, especially from the series of storms later in January.

Statewide reservoir storage was above average at 120 percent on October 1, 1996, and remained above average all year, ending at 105 percent on September 30, 1997. There was a gradual drop from 120 percent at the end of February 1997 to just slightly above average at the end of July, because operators used some of the accumulated storage to make up for the subnormal snowmelt runoff.

In-state reservoir storage remained above average at 107 percent of average for the period October through December 1997, having risen about 1 million acre-feet during December.

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 is 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 being pumped in during the period 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 1997 water year was 95 percent of average, compared to 120 percent in 1996. Total 1997 storage in major SWP reservoirs was 3.2 million acre-feet on September 30, about 900,000 acre-feet less than the storage at the same time in 1996. September 30 storage at Lake Oroville was 2.1 million acre-feet, about 600,000 acre-feet less than last year. The State's share of San Luis Reservoir storage was 462,000 acre-feet, compared to 740,000 acre-feet last year. Storage in San Luis began increasing in September due to the decreasing summer delivery demands. The combined storage in southern reservoirs was 576,000 acre-feet on September 30, compared to 626,000 acre-feet last year.

Total storage in major SWP reservoirs was about 3.8 million acre-feet at the end of calendar year 1997, compared with 4.6 million acre-feet in 1996. The 1996 figure included about 141,000 acre-feet temporary encroachment into flood control space at Lake Oroville. The State's share of San Luis Reservoir storage was about 994,000 acre-feet, compared with 1.1 million acre-feet at the same time in 1996. The combined storage in southern reservoirs was about 631,000 acre-feet on December 31, compared with 615,000 acre-feet in 1996.

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 1997 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.

Inflow to Lake Oroville for the 1997 water year totaled about 6.7 million acre-feet—150 percent of average. Minimum storage occurred September 30, 1997, at 2,139,728 acre-feet—60 percent capacity. Maximum storage occurred May 22, 1997, at 3,332,558 acre-feet—about 94 percent of capacity. See figures 8-2 and 8-3 for monthly and cumulative inflow into Lake Oroville. Total inflow into Lake Oroville during the 1997 calendar year totaled 5,611,243 acre-feet. Lake Oroville storage at the end of 1997 was 2,224,172 acre-feet. Figure 8-4 compares end-of-month storage at Lake Oroville for the 1996 and 1997 calendar years.

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

At the beginning of the 1996-97 water year, San Luis Reservoir contained 914,750 acre-feet—45 percent of its capacity. The SWP share was 737,334 acre-feet. By March 30, San Luis Reservoir reached its maximum storage for 1997 at 2,009,693 acre-feet—99 percent of normal maximum operating capacity. The highest end-of-month SWP share of storage was in December 1996 at 1,105,944 acre-feet (Figure 8-5) with the SWP storing some water in the vacant USBR share of storage.

Lake Del Valle. Lake Del Valle, situated off the South Bay Aqueduct, primarily stores water for later delivery in Santa Clara and Alameda counties. At the beginning of the 1996-97 water year, Lake Del Valle held 33,061 acre-feet—about 83 percent of its normal maximum operating capacity of 39,914 acre-feet. Its highest storage occurred January 26, 1997, at 46,290 acre-feet.

By the end of the 1997 water year, September 30, 1997, storage in Lake Del Valle dropped to 32,272 acre-feet—81 percent of normal maximum operating capacity. Releases to Arroyo Del Valle and South Bay Aqueduct from Lake Del Valle totaled 51,769 acre-feet for the 1996-97 water year.

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

At the beginning of the water year, these reservoirs held 606,725 acre-feet—87 percent of their combined normal maximum operating capacity of 701,321 acre-feet. At the end of the water year they held 589,955 acre-feet—84 percent of combined normal maximum operating capacity.

Diversions from the Delta

The SWP diverts water from the Sacramento-San Joaquin Delta through Banks and Barker Slough pumping plants for delivery to SWP storage facilities and contractors. In 1997, the SWP diverted 2,544,686 acre-feet at Banks Pumping Plant, including 201,033 acre-feet of CVP water wheeled by the Department. Figure 8-6 shows the amounts of water pumped each month at Banks Pumping Plant; Figure 8-7 shows the monthly amounts of water diverted from the Delta by the SWP and CVP in 1997.

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

During the week of December 12 to 16, 1996, the State Water Resources Control Board approved pumping CVP water at Banks Pumping Plant to facilitate high exports during a juvenile-salmon migration study being conducted by U.S. Fish and Wildlife Service. SWP storage in San Luis was already slightly above its allocated share and delivery requests were less than 2,000 cfs, making capability available at Banks Pumping Plant. SWP pumping into San Luis was suspended December 10 when storage reached the desired goal of 1.12 million acre-feet. During the 5 days, 46,324 acre-feet was pumped for the CVP, primarily for the federal share of San Luis Reservoir.

Figure 8-2
Monthly Inflow into Lake Oroville from Feather River, 1995-97 Water Years

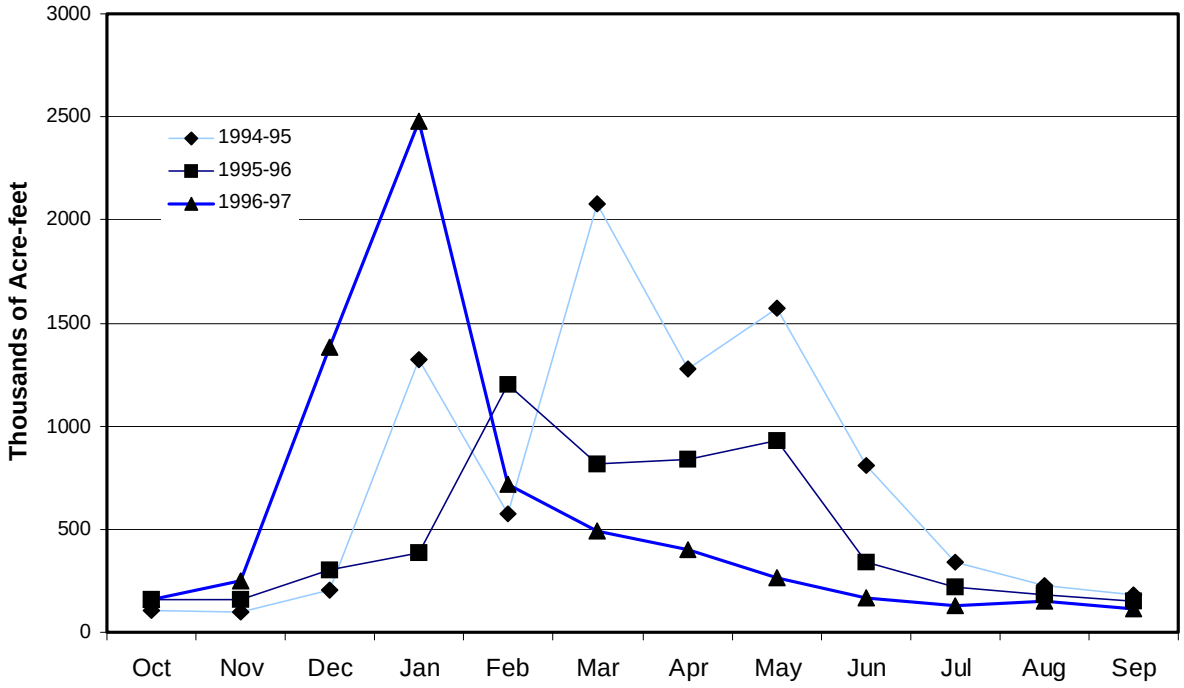


Figure 8-3
Cumulative Inflow into Lake Oroville from Feather River

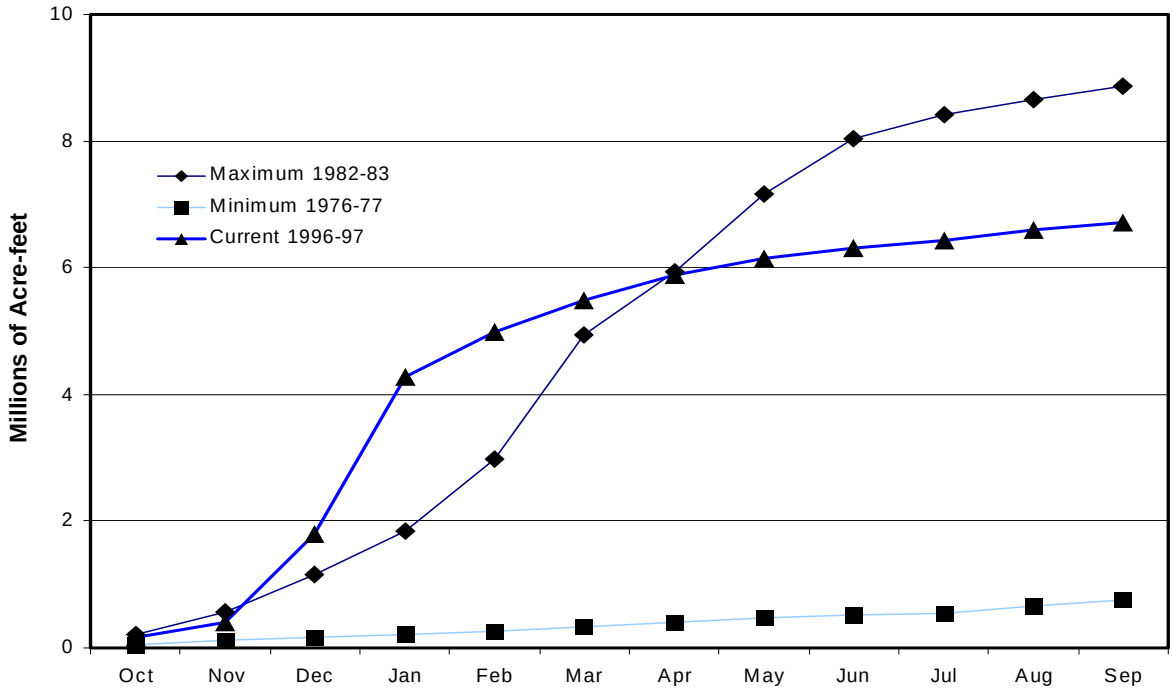


Figure 8-4
End-of-Month Storage in Oroville Reservoir, 1996 and 1997 Calendar Years

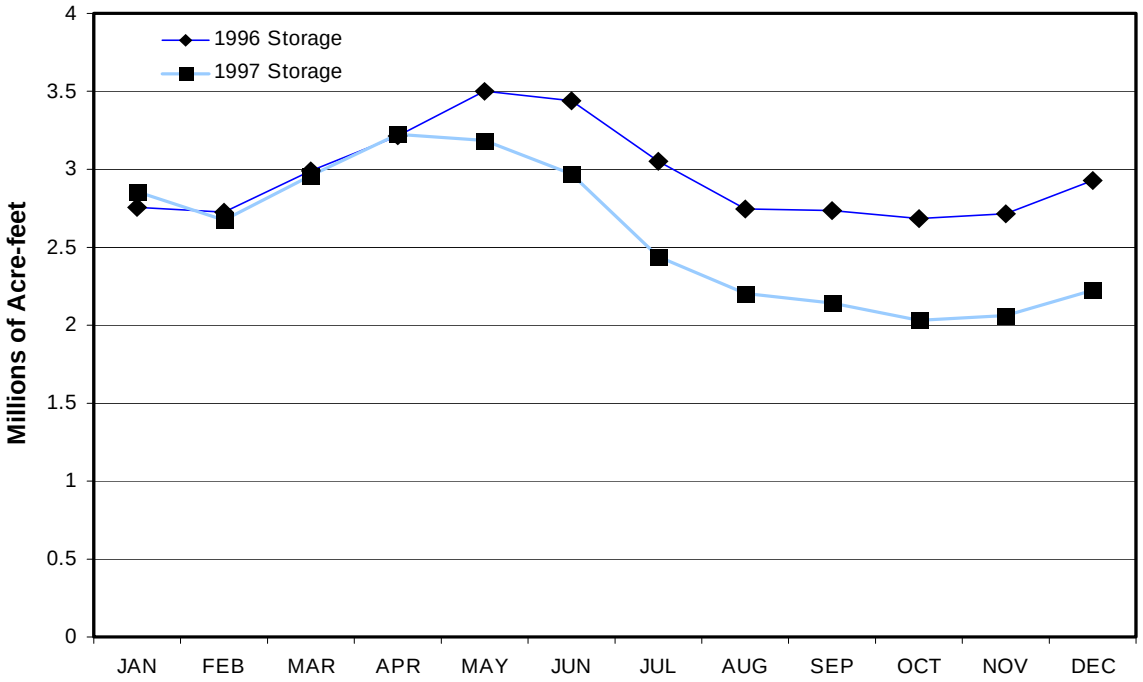


Figure 8-5
End-of-Month Storage in San Luis Reservoir, 1996 and 1997 Calendar Years

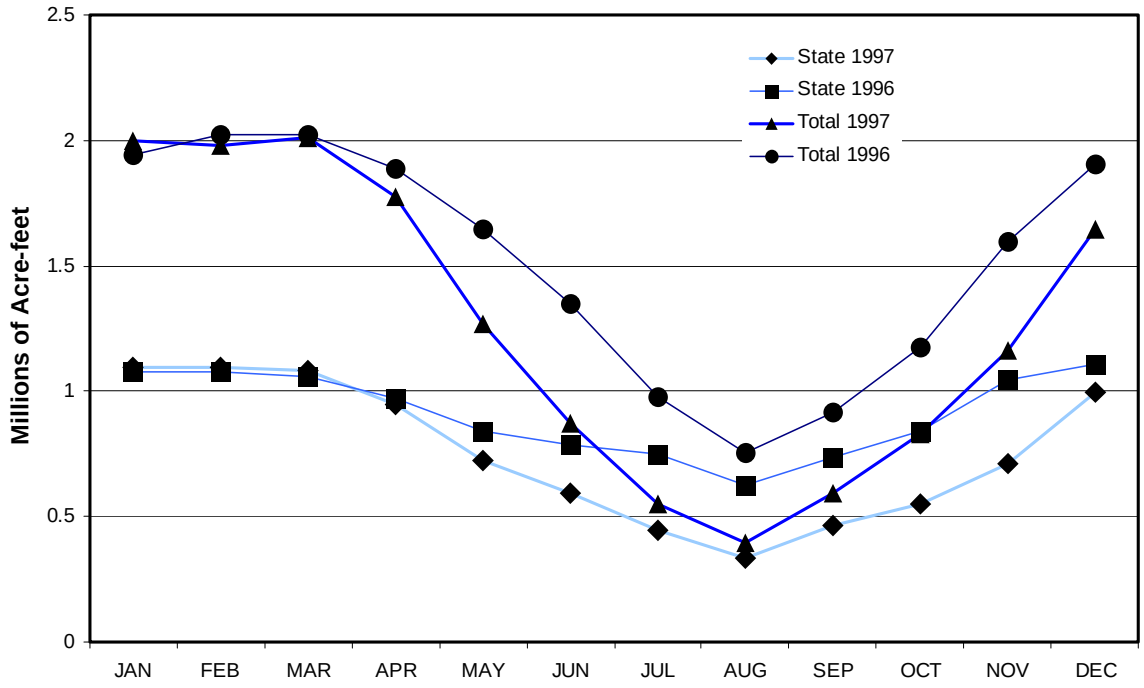


Figure 8-6
Water Pumped at Banks Pumping Plant in 1997, by Month

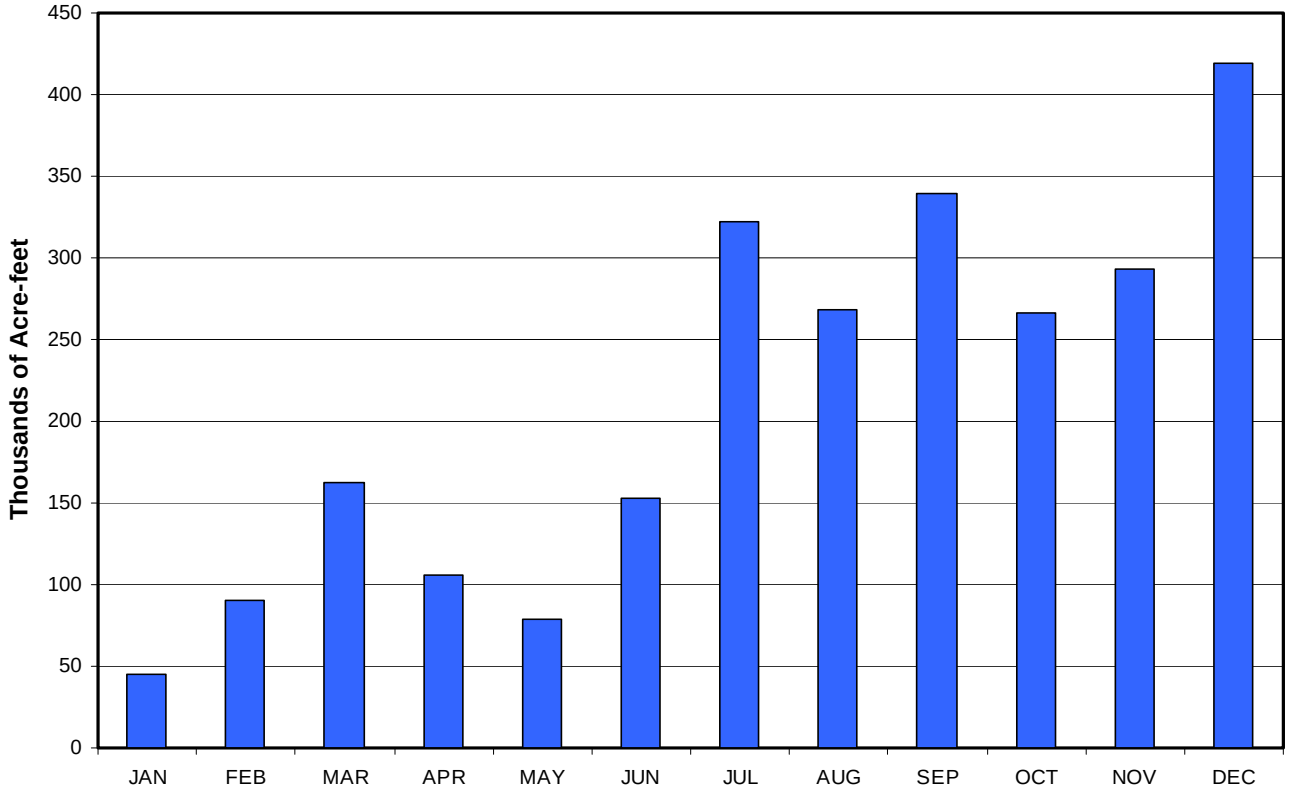
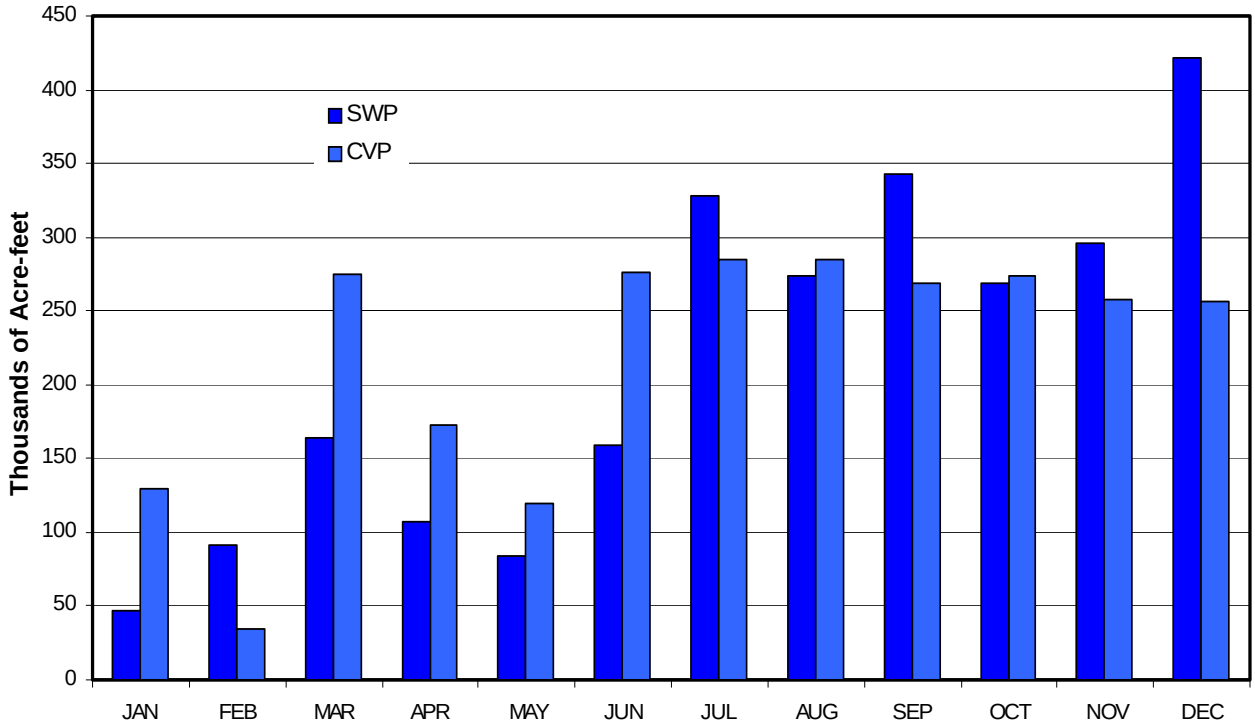


Figure 8-7
Water Diverted from the Sacramento-San Joaquin Delta by the State Water Project and Central Valley Project in 1997, by Month



Combined SWP and CVP exports increased to 3,200 cfs on May 16, following a 31-day period of exports limited to about 1,500 cfs to benefit juvenile salmon migrating down the San Joaquin River system. Both SWP and CVP increases were pumped at Banks Pumping Plant during the initial 5 days to comply with a ramping provision in the south Delta temporary barriers' permit from the U.S. Army Corps of Engineers. Combined exports were progressively increased at both Banks and Tracy pumping plants beginning May 21, rising to 10,300 cfs (6,000 SWP and 4,300 CVP) on May 25. Exports were maintained at that level through the end of May.

The SWP also diverted 39,293 acre-feet at the Barker Slough Pumping Plant to deliver through the North Bay Aqueduct for use by North Bay Aqueduct water contractors.

In the San Joaquin Valley near Kettleman City, the existing Coastal Branch of the Aqueduct serves agricultural areas west of the California Aqueduct. This branch has been extended to serve municipal and industrial water users in San Luis Obispo and Santa Barbara counties. The extended Coastal Branch was dedicated on July 18, 1997. In 1997, SWP water pumped through Dos Amigos Pumping Plant to the San Joaquin Valley totaled 2,277,404 acre-feet. Figure 8-8 shows the amount of water delivered each month.

In 1997, water pumped through Edmonston Pumping Plant for delivery to Southern California totaled 961,114 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 1997, by Month

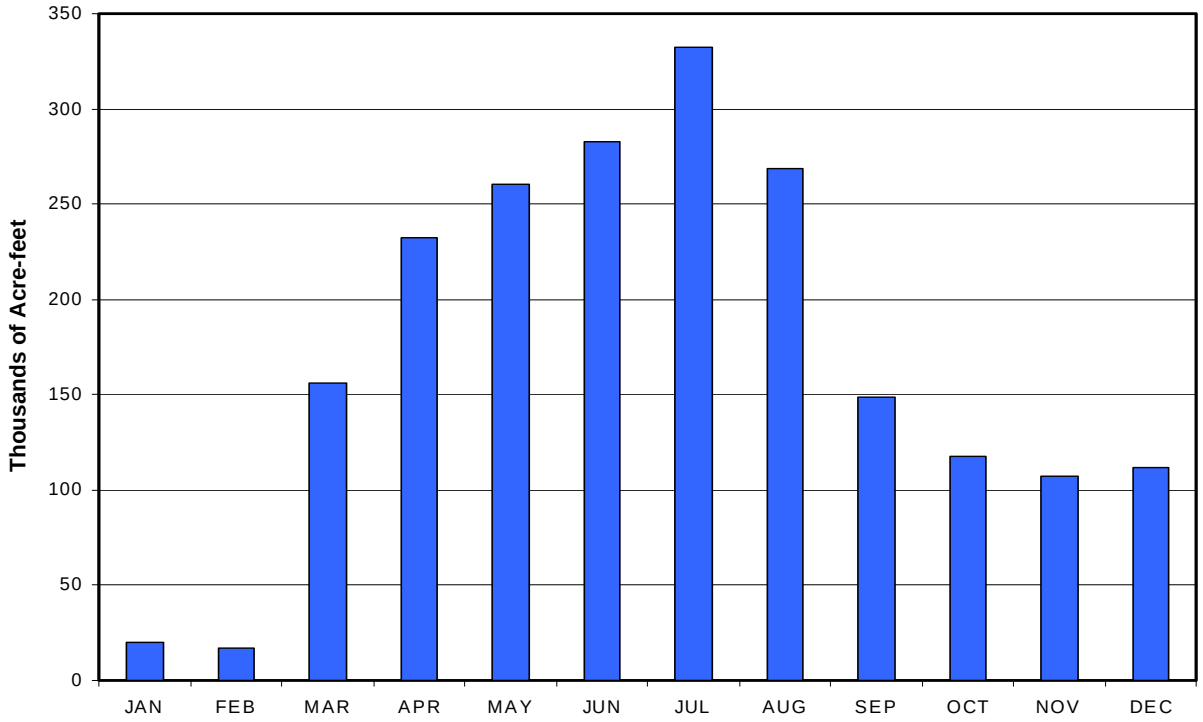
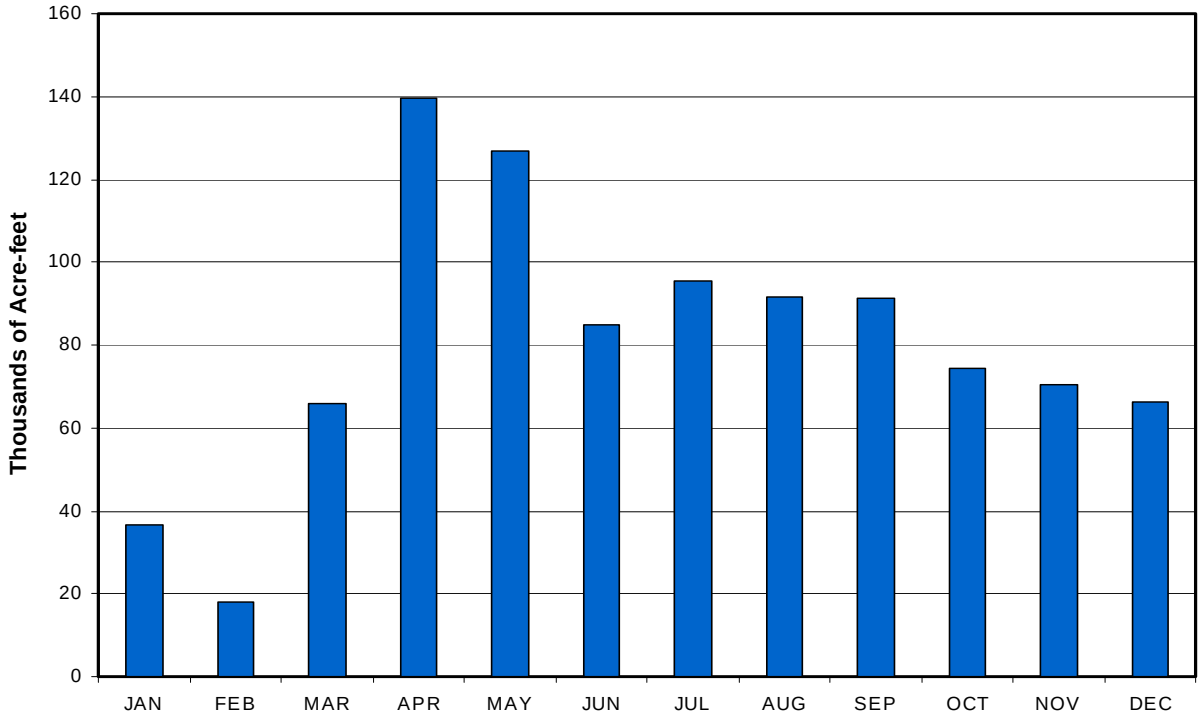


Figure 8-9
Water Pumped at Edmonston Pumping Plant in 1997, by Month



Chapter 9
Water Contracts and Deliveries

Water control gates at the entrance to the California Aqueduct from O'Neill Forebay, during construction (1966)

Significant Events

- San Luis Obispo County Flood Control and Water Conservation District and Santa Barbara County Flood Control and Water Conservation District, both received delivery of their entitlement water for the first time in history. Deliveries of 1,099 acre-feet and 7,439 acre-feet of entitlement water were delivered through the new Phase II Coastal Aqueduct facilities between August and December 1997, to SLOCFCWCD and SBCFWCD, respectively.

- In January and February 1997, the State Water Project system accepted 52,848 acre-feet of flood waters through the Kern River Intertie. This action helped to alleviate flood damage in the Kern River Basin and the lakebed at Tulare Lake. These flood flows were accepted into the Aqueduct under the terms of a 1975 agreement among the Department, Kern County Water Agency, and Buena Vista Water Storage District. The agreement allows flood water from the Kern River and inflows downstream of Lake Isabella, such as Friant-Kern Canal water, to be diverted into the California Aqueduct to alleviate flooding in Kern and Tulare counties.

  An agreement, among Coachella Valley Water District, Desert Water Agency, Delta Lands Reclamation District No. 770, Tulare Lake Basin Water Storage District, and the Department, allows flood flows from the Kaweah and Tule rivers into the SWP. Flood flows of 27,130 acre-feet were delivered to the service area of the Metropolitan Water District of Southern California, for ultimate delivery to DWA and CVWD. An additional 20,366 acre-feet went to satisfy existing SWP demands downstream of the Intertie. The remaining 5,352 acre-feet went to KCWA member units under a separate letter agreement.

- The Department executed amendments to the long-term water supply contracts of KCWA and Mojave Water Agency, providing for the sale of 25,000 acre-feet of KCWA's SWP entitlement to MWA. This was the first sale under the provisions of the Monterey Amendments that allow for the permanent sale of 130,000 acre-feet of agricultural entitlements to contractors for urban use.

- The Department executed an amendment to the long-term water supply contract between Santa Barbara County Flood Control and Water Conservation District and the Department to reduce SBCFCWCD's Table A entitlement by 6,500 acre-feet for a period of 2 years (1997 and 1998) before returning to the previous maximum of 45,486 acre-feet.

- The Department executed an amendment to the long-term water supply contract between SBCFCWCD and the Department to define the new Phase II aqueduct facilities and delete the inapplicable facilities from Table I of the contract. Tables B-1 and B-2, were modified to revise the proportionate use of facilities factors to conform with the delivery capability of the Phase II facilities.

- The Department executed amendments to the long-term water supply contracts of San Gorgonio Pass Water Agency and San Bernardino Valley Municipal Water District, providing for their participation in the new conveyance and pumping facilities of the East Branch Extension from Devil Canyon Powerplant through SBVMWD's service area to SGPWA's service area.

- The Department executed an amendment to the long-term water supply contract between San Luis Obispo County Flood Control and Water Conservation District and the Department to reduce SLOCFCWCD's Table A entitlement by 18,785 acre-feet to 6,215 acre-feet for a period of two years (1997 and 1998) before returning to the previous maximum of 25,000 acre-feet.

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

The Department delivers water to SWP contractors according to long-term water supply contracts, which are amended as needed. The contracts, among other things, specify amounts of water that the Department may deliver to SWP contractors every year. During 1997, the Department executed nine amendments to these contracts, including six amendments resulting from the Monterey Amendment.

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 and approve turnout construction along SWP facilities and establish turnout operation and maintenance regulations.

During 1997, the Department executed 23 water conveyance/storage agreements with SWP contractors and six with other agencies. The Department also executed a turnout agreement with one SWP contractor. During the same reporting period, the Department executed six water conveyance agreements, modified one existing water conveyance agreement, and amended one turnout agreement with non-SWP contractors.

Long-Term SWP Water Supply Contracts

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

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

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

The contracts were initially designed to be valid for 75 years or until all bonds sold as part of the California Water Resources Development Bond Act were repaid, whichever period was longer. As a result of amendments to contracts in the 1990s, the current combined maximum annual entitlement totals 4,172,786 acre-feet, and the contracts are in effect for the longest of the following periods: (1) the project repayment period, which extends to the year 2035; (2) 75 years from the date of the contract; or (3) the period ending with the latest maturity date of any bond used to finance the construction costs of project facilities.

Detailed information about contracts and amendments follows.

Amendments to Long-Term SWP Water Supply Contracts

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

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

Table 9-1 describes the eight categories of amendments while Table 9-2 lists contractors to which those categories apply.

The following long-term contracts were amended during 1997.

Kern County Water Agency. The Department executed Amendment Number 26, dated January 31, 1997, to the long-term water supply contract between KCWA and the Department. The Amendment provided for the sale of 25,000 acre-feet of agricultural entitlement by KCWA on behalf of Berrenda Mesa Water District to MWA and set forth conditions for the sale. The sale is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural entitlement water to urban agencies. Exhibit A of the amendment, Kern's Allocated Capacity for Each Reach, was revised on September 2, 1997, to correct an error.

Mojave Water Agency. The Department executed Amendment Number 18, dated January 31, 1997, to the long-term water supply contract between MWA and the Department. The Amendment provided for the purchase of 25,000 acre-feet of agricultural entitlement by MWA from KCWA acting on behalf of BMWD and set forth conditions for the purchase. The purchase is consistent with implementation of the Monterey Amendment, which provides for the permanent transfer of up to 130,000 acre-feet of agricultural entitlement water to urban agencies.

Table 9-1
Amendments to Water Supply Contracts, by Category

Category [a]	*Description*
1. Revision of annual entitlements	Amendments to Table A, "Annual Entitlements," of water supply contracts resulting in changes in annual amounts of entitlement water to long-term water service contractors
2. Enlargement or extension of East Branch and Extension of Coastal Branch of California Aqueduct	Amendments for allocating costs and benefits of the East Branch enlargement of the East Branch aqueduct,and extension of the Phase II facilities of the Coastal Branch of the California Aqueduct
3. Purchase of excess capacity	Amendments to allow contractors to contract for excess capacity in the California Aqueduct
4. Provisions to carry over entitlement water [Article12(e)]	Amendments to allow contractors to carry over undelivered entitlement water from one year for delivery in the next year, providing certain conditions are met
5. Surplus water provisions	Amendments to allow contractors to take delivery of surplus water; that is, water in excess of that required to meet all demands for entitlement water
6. Unscheduled water provisions	Amendments to allow contractors to take delivery of unscheduled water; that is, water available for a very short time when excess water and SWP pumping capacity are available in the Delta
7. Wet-weather provisions	Amendments to allow contractors to take, under certain conditions, delivery of entitlement water in subsequent years if favorable local weather conditions result in adequate local water supplies
8. Monterey Agreement principles	Amendments to implement the principles of the Monterey Agreement, described in detail in Bulletin 132- 95, pages 5 through 9.

[a] See Table 9-2, "Amendments to Water Supply Contracts, December 31, 1997, by Category and Contracting Agency," for names of contractors to which categories apply. In addition, each volume of *The California State Water Project Water Supply Contracts* contains a list of amendments by category.

Table 9-2
Amendments to Water Supply Contracts, December 31, 1997, by Category and Contracting Agency

	State Water Project Amendment Category [a]							
Contracting Agency	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Upper Feather River Area								
City of Yuba City	•				○ [b]			•
County of Butte	•			•	○			•
Plumas County Flood Control and Water Conservation District				•				
North Bay Area								
Napa County Flood Control and Water Conservation District	•			•	○	○ [b]		•
Solano County Water Agency	•		•	•	○	○		•
South Bay Area								
Alameda County Flood Control and Water Conservation District-Zone 7	•			•	○		○	•
Alameda County Water District				•	○	○	○	•
Santa Clara Valley Water District	•			•	○	○	○	•
San Joaquin Valley Area								
County of Kings				•	○		○	•
Dudley Ridge Water District	•			•	○	○		•
Empire West Side Irrigation District	•			•	•	•	•	
Kern County Water Agency	•				○	○		•
Oak Flat Water District	•			•	○	○	○	•
Tulare Lake Basin Water Storage District	•			•	○	○	○	•
Central Coastal Area								
San Luis Obispo County Flood Control and Water Conservation District	•			•	○			•
Santa Barbara County Flood Control and Water Conservation District	•	•		•	○			•
Southern California Area								
Antelope Valley-East Kern Water Agency	•	•	•	•	○			•
Castaic Lake Water Agency	•			•	○			•
Coachella Valley Water District	•	•		•	○			•
Crestline-Lake Arrowhead Water Agency	•			•	○			•
Desert Water Agency	•	•		•	○	○		•
Littlerock Creek Irrigation District	•			•	○			•
Metropolitan Water District of Southern California	•	•	•	•	○	○		•
Mojave Water Agency	•	•		•	○			•
Palmdale Water District	•	•		•	○			•
San Bernardino Valley Municipal Water District	•	•		•	○			•
San Gabriel Valley Municipal Water District	•		•	•	○			•
San Gorgonio Pass Water Agency	•	•		•	○			•
Ventura County Flood Control District				•	•			

[a] Categories correspond to those listed in Table 9-1, "Amendments to Water Supply Contracts, by Category."
[b] ○ indicates amendment category nullified by Monterey Amendments.

San Gorgonio Pass Water Agency. The Department executed Amendment Number 15, dated March 27, 1997, to the long-term water supply contract between SGPWA and the Department. The Amendment set forth conditions for SGPWA's participation in the new conveyance and pumping facilities of the East Branch Extension from Devil Canyon Powerplant through SBVMWD's service area to SGPWA's service area near Little San Gorgonio Creek and South Noble Creek Spreading Grounds.

San Bernardino Valley Municipal Water District. The Department executed Amendment Number 16, dated March 27, 1997, to the long-term water supply contract between SBVMWD and the Department. The Amendment set forth conditions for SBVMWD's participation in the new conveyance and pumping facilities of the East Branch Extension from Devil Canyon Powerplant through SBVMWD's service area.

San Luis Obispo County Flood Control and Water Conservation District. The Department executed Amendment Number 15, dated August 4, 1997, to the long-term water supply contract between SLOCFCWCD and the Department. The Amendment provided for revisions to Table A of SLOCFCWCD's long-term water supply contract in accordance with the principles of the Monterey Amendment. The Amendment reduced Table A entitlement to 6,215 acre-feet for a period of two years, 1997 and 1998, before returning to the previous maximum of 25,000 acre-feet.

Santa Barbara County Flood Control and Water Conservation District. The Department executed Amendment Number 17, dated April 15, 1997, to the long-term water supply contract between SBCFCWCD and the Department. The Amendment reduced their Table A entitlement by 6,500 acre-feet for a period of 2 years, 1997 and 1998, before returning to the previous maximum of 45,486 acre-feet.

Santa Barbara County Flood Control and Water Conservation District. The Department executed Amendment Number 18, dated December 4, 1997, to the long-term water supply contract between SBCFCWCD and the Department. The Amendment defined the new Phase II aqueduct facilities and deleted the inapplicable facilities from Table I of the contract. Tables B-1 and B-2 were modified to revise the proportionate use of facilities factors to conform with the delivery capability of the amended Phase II facilities.

Monterey Amendments

During 1997, the Department executed two Monterey Amendments, one with SBVMWD in March and the other with City of Yuba City in July. The Department had previously executed Monterey Amendments with 24 other long-term water supply contractors, including County of Butte, Castaic Lake Water Agency, CVWD, the County of Kings, Solano County Water Agency, Alameda County Flood Control and Water Conservation District-Zone 7, Alameda County Water District, Santa Clara Valley Water District, DRWD, KCWA, TLBWSD, SBCFCWCD, Antelope Valley-East Kern Water Agency, Crestline-Lake Arrowhead Water Agency, DWA, MWA, MWD, Napa County Flood Control and Water Conservation District, OFWD, SLOCFCWCD, Littlerock Creek Irrigation District, Palmdale Water District, San Gabriel Valley Municipal Water District, and SGPWA. Plumas County Flood Control and Water Conservation District, Empire West Side Irrigation District, and Ventura County Flood Control District are the only long-term SWP contractors that have not signed the Monterey Amendment.

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

Miscellaneous Agreements with Long-Term SWP Contractors

During 1997, the Department entered into the following agreements.

Water Conveyance/Storage Agreements

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

Alameda County Water District. ACWD and ACFCWCD-Zone 7 have water rights to divert up to 60,000 acre-feet per year of local flow from Arroyo Valle, the stream that flows into Lake Del Valle. Since the previous agreement for the storage of local flows in Lake Del Valle expired, a new agreement was executed March 26, 1997, between the Department and the districts. The agreement, effective through December 31, 2012, defines the terms and conditions under which the Department will store the districts' local flow in Lake Del Valle.

Alameda County Water District. An agreement, anticipated for signature in 1998, among ACWD, KCWA, and the Department, provides for the delivery of a portion of ACWD's 1997 entitlement water and other water supplies, to be stored in, and later recovered from, groundwater basins within the KCWA, in accordance with the Alameda 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 KCWD signed a similar delivery agreement in 1996. These agreements were 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 1997, the Department delivered 10,000 acre-feet of ACWD's 1997 SWP entitlement water for storage by Semitropic.

Dudley Ridge Water District. During 1997, letter agreements among DRWD, KCWA, and the Department approved two separate transfers of DRWD's 1997 SWP entitlement water to KCWA to facilitate transfers from Paramount Farming Company, a landholder in DRWD, to land it farms in KCWA's service area. The first agreement dated July 17, 1997, approved the transfer of up to 3,000 acre-feet, and the second, dated November 13, 1997, approved up to 4,000 acre-feet. The total amount delivered to KCWA under both agreements was 5,800 acre-feet.

Dudley Ridge Water District. A letter agreement, dated October 22, 1997, approved the transfer of up to 5,000 acre-feet of DRWD's 1997 interruptible water and up to 2,000 acre-feet of DRWD's 1997 SWP entitlement water for delivery to the Kern Water Bank and the return of a like amount of water by December 31, 2007. The Department approved a similar agreement in 1996. During 1997, the actual amount of interruptible water delivered to KWB was 4,442 acre-feet; entitlement water delivered was 900 acre-feet.

Kern County Water Agency. A letter agreement dated April 2, 1997, between the Department and KCWA, approved the exchange of up to 20,000 acre-feet of KCWA 1997 SWP entitlement water for a like amount of WWD's CVP water stored in San Luis Reservoir. This exchange involved reclassification of some entitlement water delivered to KCWA during January and February 1997 as WWD exchange water. A total of 10,443 acre-feet was actually exchanged.

Kern County Water Agency. A letter agreement dated June 10, 1997, between the Department and KCWA allowed the conveyance of up to 6,000 acre-feet of local water from the Friant-Kern Canal and Kern River through the Kern River Intertie for delivery to KCWA turnouts. Kern River Intertie operations during January and February 1997 alleviated flooding in Kern and Tulare counties, but disrupted deliveries within KCWA's Kern River distribution system. This letter agreement restored some of these deliveries. A total of 5,352 acre-feet was actually delivered.

Kern County Water Agency. A letter agreement dated June 18, 1997, between the Department and KCWA, approved the transfer of up to 47,520 acre-feet of KCWA's 1997 SWP entitlement water to WWD. The agreement facilitated a water transfer from landholders within four member units of the agency—Lost Hills Water District, BMWD, Belridge Water Storage District, and Wheeler Ridge-Maricopa Water Storage District—to lands they farmed in WWD. A similar transfer was approved by the Department in 1996. The actual amount of water transferred from KCWA to WWD in 1997 was 39,020 acre-feet.

Kern County Water Agency. A letter agreement dated July 8, 1997, between the Department and KCWA, approved the exchange of up to 125,000 acre-feet of KCWA's 1997 SWP entitlement water to WWD for a like amount of return water from WWD over the next 10 years. The return water will be delivered to KCWA from the Friant-Kern Canal. The full 125,000 acre-feet were delivered to WWD in 1997.

Kern County Water Agency. A letter agreement between KCWA and the Department, dated July 11, 1997, approved an exchange of up to 30,000 acre-feet of KCWA's SWP entitlement water to facilitate a water transfer by La Hacienda, Inc. The arrangements enabled La Hacienda to transfer and sell 30,000 acre-feet of its Lake Isabella water to WWD by exchanging the water with KCWA. La Hacienda will transfer to KCWA up to 30,000 acre-feet of 1997 Kern River water stored in Lake Isabella. The water transferred from Lake Isabella will be recharged within KCWA's service area. In exchange for the Kern River water, a like amount of KCWA's entitlement water was delivered to WWD during 1997 at Reach 7 for delivery to areas within the SWP service area.

Kern County Water Agency. A letter agreement dated August 20, 1997, between the Department and KCWA approved the exchange of up to 12,000 acre-feet of KCWA's 1997 SWP entitlement water to WWD for a like amount of pre-1914 water right water purchased by WWD. The return water will be delivered from the Friant-Kern Canal to KCWA for recharge. The letter agreement was amended on December 12, 1997, to increase the exchange limit to 20,000 acre-feet.

Kern County Water Agency. A letter agreement dated September 12, 1997, between the Department and KCWA, approved the return and exchange of up to 2,500 acre-feet of KCWA's 1997 SWP entitlement water to WWD for a like amount of WWD's water. The WWD water was delivered to KCWA via the Friant-Kern Canal prior to March 1, 1996.

The total actual exchanges for the July 11, 1997, August 20, 1997, and September 12, 1997, agreements was 49,099 acre-feet.

Kern County Water Agency. A letter agreement dated August 28, 1997, among KCWA, TLBWSD, and the Department, approved the transfer of up to 1,500 acre-feet of KCWA's 1997 SWP entitlement water to TLBWSD. The water was transferred from LHWD, a member unit of KCWA, to Westlake Farms located within the service area of TLBWSD. The transferred water is used to create wetland habitat for shore birds as required under a

mitigation agreement between the Regional Water Quality Control Board and LHWD for the operation of LHWD's evaporation basin. The full 1,500 acre-feet were transferred in 1997. A similar transfer was approved by the Department in 1996.

Kern County Water Agency. A letter agreement dated December 18, 1997, among the Department, KCWA, and TLBWSD, approved the transfer of up to 10,000 acre-feet of KCWA's 1997 SWP entitlement water to TLBWSD. This agreement facilitated the water transfer from J. G. Boswell Company, a landowner within Henry Miller Water District, a member unit of KCWA, to lands farmed by Boswell within TLBWSD. No water was actually transferred under this agreement.

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

Metropolitan Water District of Southern California. A letter agreement dated December 29, 1997, among the Department, MWD, KCWA, and Arvin-Edison Water Storage District, approved the transfer of up to 20,000 acre-feet of MWD's 1997 SWP entitlement water to KCWA for storage in AEWSD groundwater basin by February 28, 1998. A total of 1,486 acre-feet of MWD's 1997 entitlement water was delivered to groundwater storage.

Mojave Water Agency. A letter agreement dated July 16, 1997, between the Department and MWA, approved the conveyance of up to 2,000 acre-feet of CVP water purchased by MWA from the Natomas Central Mutual Water Company. The water was conveyed from the Delta to MWA's turnouts on the East Branch of the California Aqueduct. The actual amount delivered was 1,600 acre-feet due to a 20 percent carriage loss across the Sacramento-San Joaquin Delta.

Mojave Water Agency. An agreement dated November 13, 1997, among MWA, AVEKWA, and the Department, approved a change in point of delivery of up to 2,250 acre-feet of MWA's annual entitlement water to AVEKWA's Fairmont Turnout in Reach 19 annually through year 2019. MWA does not have conveyance facilities to provide service to a solar energy generating station located within MWA's boundaries. The actual amount delivered to Reach 19 in 1997 pursuant to this agreement was 64 acre-feet. However, 1,272 acre-feet under this agreement were also delivered to Reach 20A.

San Luis Obispo County Flood Control and Water Conservation District. The letter agreement, dated March 19, 1997, among SLOCFCWCD, TLBWSD, County of Kings, and the Department, approved the transfer of up to 100 acre-feet of SLOCFCWCD 1997 SWP entitlement water to the County of Kings. The water was delivered from the California Aqueduct to King's service area through TLBWSD's turnouts and conveyance system. This letter agreement facilitated a water transfer from Union Oil Company of California, a landholder with the Avila Beach County Water District, a subcontractor of SLOCFCWCD, to land they own in Kings. The full 100 acre-feet was transferred. The letter agreement extended the same terms and conditions of a 1996 letter agreement for another year.

Santa Clara Valley Water District. The agreement, dated November 10, 1997, among SCVWD, KCWA, and the Department, provided for the delivery of a portion of SCVWD's 1997 SWP entitlement water and other water supplies, to be stored in and later recovered from groundwater basins within KCWA, in accordance with the Santa Clara and Semitropic Water Storage District Banking Program Agreement. The stored water is to be returned to SCVWD by year 2035. This was in accordance with the provisions of the Monterey Agreement that encourage operational flexibility for the SWP, such as groundwater storage of SWP water outside a contractor's service area for later use within the service area. A similar agreement was approved by the Department in 1996. The amount of 1997 entitlement water delivered to Semitropic pursuant to this agreement was 35,000 acre-feet.

San Bernardino Valley Municipal Water District. The Cooperative Interchange Agreement, dated January 7, 1997, among SBVMWD, MWD, and the Department, set forth the terms for SBVMWD to deliver surface water of up to 5,000 acre-feet, when available, from the Santa Ana River and/or Mill Creek into the Foothill Pipeline for delivery to MWD through the Devil Canyon Afterbay during the scheduled outage of the San Bernardino tunnel in early 1997. The agreement also required MWD to return a like amount of its SWP entitlement water to SBVMWD in 1997. The actual exchange between SBVMWD and MWD was 2,313 acre-feet.

Solano County Water Agency. A letter agreement dated July 17, 1997, among the Department, SCWA, and MWA, approved the transfer of up to 10,000 acre-feet of SCWA's 1997 SWP entitlement water to MWA for the return of up to 5,000 acre-feet of MWA's future SWP entitlement water or other future water supply as mutually agreed to by MWA and SCWA and approved by the Department. The water is to be returned by December 31, 2007, during a dry year. The actual amount transferred to MWA in 1997 was 2,000 acre-feet.

Tulare Lake Basin Water Storage District. The agreement, dated April 18, 1997, among CVWD, DWA, Delta Lands Reclamation District No. 770, TLBWSD, MWD, and the Department, set forth terms for the transfer of flood flows from the Kaweah and Tule rivers to the service area of MWD, which in turn exchanged a like amount of its Colorado River aqueduct water to DWA and CVWA. A total of 27,130 acre-feet of flood waters was conveyed as non-SWP water deliveries to reduce the amount of flood-water damage within the Tulare Lake lakebed.

Tulare Lake Basin Water Storage District. A letter agreement, dated May 7, 1997, between the Department and TLBWSD, approved the transfer of up to 4,000 acre-feet of the TLBWSD SWP entitlement water to WWD. The agreement facilitated the water transfer from Hansen Ranches, a landowner in the TLBWSD, to lands it farms in WWD under the name of Vista Verde Farms, Incorporated. The actual amount transferred was 3,500 acre-feet. A similar transfer was approved by the Department in 1996.

Turnout Agreements

Dudley Ridge Water District. An agreement dated March 5, 1997, between the Department and DRWD, allowed the construction, operation, and maintenance of the Dudley Ridge Turnout 1-B, located at milepost 177.54, Reach 8D, on the east side of the California Aqueduct. The turnout, completed in June 1997, has a design capacity of 25 cfs.

Agreements Related to the Monterey Amendments

Turnback Water Pool Program. Under Article 56(d) of the Monterey Amendments, the second year of the Turnback Water Pool Program was initiated through Notice to the State Water Project Contractors No. 97-3, dated February 5, 1997. 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 1997 entitlement for sale in a turnback pool for use outside their service area. Other contractors interested in purchasing this water could then request a portion or all of it. Based on supply and demand, the turnback water was allocated among the selling and purchasing contractors.

Transactions for pool A occurred in January and February 1997; transactions for pool B occurred in March 1997. Turnback water sold for $11.32 per acre-foot (50 percent of the Delta Water Rate) through pool A and for $5.66 per acre-foot (25 percent of the Delta Water Rate) through pool B. All money collected through the turnback pool program was paid to the selling contractors. The 1997 Turnback Water Pool Program closed April 1, 1997.

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

- SLOCFCWCD sold 17 acre-feet;
- NCFCWCD sold 8 acre-feet;
- ACFCWCD-Zone 7 sold 119 acre-feet;
- County of Kings sold 24 acre-feet;
- TLBWSD sold 532 acre-feet;
- SBCFCWCD sold 131 acre-feet;
- AVEKWA sold 455 acre-feet;
- CLWA sold 119 acre-feet;
- SGVMWD sold 76 acre-feet;
- City of Yuba City sold 48 acre-feet; and
- DRWD purchased 1,529 acre-feet.

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

- SLOCFCWCD sold 784 acre-feet;
- City of Yuba City sold 1,954 acre-feet;
- NCFCWCD sold 314 acre-feet;
- ACFCWCD-Zone 7 sold 3,883 acre-feet;
- County of Kings sold 965 acre-feet;
- TLBWSD sold 21,494 acre-feet;
- SBCFCWCD sold 5,313 acre-feet;
- AVEKWA sold 18,395 acre-feet;
- CLWA sold 4,825 acre-feet;
- SGVMWD sold 3,088 acre-feet;
- DRWD purchased 11,015 acre-feet;
- DWA purchased 15,000 acre-feet; and
- CVWD purchased 35,000 acre-feet.

The Department purchased the remaining 190,402 acre-feet of turnback water for use as SWP water supply in 1998.

Other Administrative Actions

Kern River Intertie. In January and February 1997, the Department accepted 52,848 acre-feet of flood water flows into the California Aqueduct from the Kern River Intertie. Under a 1975 agreement among the Department, KCWA, and Buena Vista Water Storage District, flood water from the Kern River and other water that enters the Kern River downstream of Lake Isabella, such as Friant-Kern Canal water, can be diverted into the California Aqueduct to alleviate flooding in Kern and Tulare counties. A total of 20,366 acre-feet of the flood water went to satisfy existing SWP demands downstream of the Intertie in accordance with the 1975 agreement. Another 27,130 acre-feet was delivered to DWA and CVWD (see TLBWSD under Miscellaneous Agreements with Long-Term SWP Contractors, above). The remaining 5,352 acre-feet went to KCWA member units under a separate letter agreement.

Dudley Ridge Water District. By letter dated May 12, 1997, the Department approved a boundary change for DRWD in accordance with Article 15 of their long-term water supply contract with the Department. Approximately 4,200 acres were annexed into the service area of DRWD from the County of Kings service area.

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.

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 at Reach 12E near Tupman in Kern County. Other agencies or corporations receive CVP water through agreements between the Department and USBR, including the U.S. Department of Veterans Affairs, U.S. Fish and Wildlife Service, and Musco Olive Products, Inc. Occasionally, the Department also enters into agreements with USBR to convey CVP or SWP water from the Delta to O'Neill Forebay through CVP or SWP facilities. Some of these agreements allow USBR to make up for curtailed water exports from Tracy Pumping Plant associated with improving conditions for fish in the Delta. Other agreements allow replacing water exports foregone during maintenance and repair of the Tracy and Banks pumping plants and CVP and SWP conveyance facilities between the Delta and O'Neill Forebay.

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

- individual three-party contracts with the Department and USBR executed in 1975 and 1976;
- individual amendments to those contracts, signed on December 28, 1995; and

- 2-year interim renewal contracts signed February 29, 1996, which will be renegotiated and probably extended through February 29, 2000.

The Department executed agreements with two CVC contractors as follows:

On July 17, 1997, LTRID and PID requested that the Department change the point of delivery for a portion of their 1997 CVP entitlement water from the CVC turnout to turnouts in Reaches 4 through 7 of the California Aqueduct for delivery to WWD. As a result, the Department and the two districts executed agreements on July 31, 1997, for Department conveyance of up to 27,992 acre-feet of CVP water for each district.

U.S. Fish and Wildlife Service Cooperative Agreement. Since 1985, the Department has conveyed CVP water to the Kern National Wildlife Service for USFWS under annual agreements. However, in 1993, USBR initiated a cooperative agreement with the Department to convey CVP water to the Kern National Wildlife Refuge for a longer period. Under the terms of this cooperative agreement, dated September 9, 1994, up to 26,530 acre-feet of CVP water would be delivered from Check 21 to the Buena Vista Water Storage District Turnout BV-1B, on Reach 10A of the California Aqueduct, from October 1, 1993, through April 10, 1995. Since the cooperative agreement was signed, six modifications to the agreement have been executed. Under Modification No. 001, dated October 31, 1994, additional funding was provided. Under Modification No. 002, dated April 14, 1995, the following changes were made:

- the term of the agreement was extended through April 10, 1998;
- Storage District Turnout BV-2B, in Reach 12E of the California Aqueduct, was added as a second point of delivery;
- additional funds were provided; and
- the quantity of water to be delivered was increased to 82,837 acre-feet.

Modification No. 003, dated May 10, 1995, defined the water delivery charges for calendar year 1995 and specified that those charges would be adjusted annually. Modification No. 004, dated February 15, 1996, incorporated water delivery charges for calendar year 1996. Modification No. 005, dated December 10, 1996, incorporated water delivery charges for calendar year 1997.

U.S. Bureau of Reclamation. A letter agreement, dated July 16, 1997, between the Department and USBR, provided for Department conveyance of 88,497 acre-feet of CVP water from the Delta to O'Neill Forebay during February and March 1997. USBR requested the conveyance while they were performing a replace/repair of fish screen louver guides at the Tracy Pumping Plant.

U.S. Bureau of Reclamation. A letter agreement, dated August 11, 1997, between the Department and USBR, provided for Department conveyance of 20,000 acre-feet of CVP water from the Delta to O'Neill Forebay. USBR purchased this water from Yuba County Water Agency to meet fish and wildlife needs in 1998, associated with implementation of the Central Valley Project Improvement Act.

U.S. Bureau of Reclamation. Pursuant to a letter agreement, dated October 9, 1997, between the Department and USBR, the Department conveyed 68,565 acre-feet of CVP water during September and November 1997 from the Delta to O'Neill Forebay. The Department conveyed the CVP water to allow USBR to make up water exports foregone at Tracy Pumping Plant in April and May 1997 to improve fish protection in the Delta.

Amendments to Miscellaneous Agreements with Other Agencies

Musco Olive Products. An annual agreement, dated December 26, 1996, between the Department and USBR, provided for the conveyance of up to 300 acre-feet of CVP water to Reach 2A of the California Aqueduct for use by Musco Olive Products, Inc., during 1997. However, it is anticipated that an amendment will be executed in 1998 to increase the amount of water conveyed in 1997 to a maximum of 350 acre-feet.

Water Deliveries

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

- 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 1997, 3,666,564 acre-feet of water were conveyed to 26 long-term contractors and 16 other agencies. That amount includes:

- 2,347,207 acre-feet of entitlement water[1], with 2,056,345 acre-feet delivered to long-term contractors, 227,062 acre-feet transferred or exchanged to WWD, 62,544 acre-feet of purchase pool water, and 1,256 acre-feet paid back to Castaic Lake from CLWA's 1997 entitlement water for flexible storage withdrawn in 1996 by CLWA;
- 4,146 acre-feet of recreation/fish and wildlife water; and
- 1,315,211 acre-feet of nonentitlement water delivered to satisfy water rights settlement agreements and agreements made with SWP contractors and other agencies, including USBR.

Figure 9-1 shows amounts of water delivered to various locations during 1997.

[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 1997 and historical deliveries from 1962 through 1997 is presented in the following three sections, each with a corresponding table:

- water delivered and future credits granted to long-term contractors in 1997 (Table 9-3);
- water delivered in 1997 by month (Table 9-4); and
- annual water entitlements and water conveyed, by water type, from 1962 through 1997 (Table 9-5).

Water Deliveries and Credits to Long-Term SWP Contractors

Table 9-3 shows amounts of water delivered in 1997 and future entitlement credits granted to long-term contractors through 1997. The following information about specific columns in Table 9-3 is arranged by column number.

1997 Entitlement Water Delivered. Columns 1 through 4 show a detailed breakdown of entitlement water delivered to long-term water supply contractors in 1997.

1997 Interruptible Water. Column 5 shows 21,432 acre-feet of interruptible water delivered to long-term water supply contractors in 1997.

1996 Carryover Entitlement Water Delivered During 1997. 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 1996 for delivery in 1997.

Figure 9-1
Water Delivered and Delivery Locations
in Calendar Year 1997 to Long-Term Water Supply Contractors and to Districts in the Feather River Area with Water Right Agreements with the Department

Table 9-3
Water Delivered to Long-Term Contractors through 1997, by Service Area (Acre-Feet)

Water Contractor or Agency	Water Deliveries in 1997												
	Entitlement Water Deliveries											Other Water Deliveries (12) [a]	Total Deliveries (13)
	1997 Entitlement without Transfers, Exchanges, and Storage (1)	1997 Entitlement Delivered Through Transfers and Exchanges (2)	1997 Entitlement Delivered to Storage (3)	Total 1997 Entitlement Delivered (4)	1997 Interruptible Water (5)	1996 Carryover Entitlement Delivered during 1997 (6)	Makeup Water per Article 12(d) (7)	Makeup Water per Article 14(b) (8)	Purchase Pool A (9)	Purchase Pool B (10)	Total Entitlement (11)		
Feather River Area													
County of Butte	185			185							185		185
Plumas County Flood Control and Water Control District	231			231							231		231
City of Yuba City	1,005			1,005							1,005		1,005
North Bay Area													
Napa County Flood Control and Water Control District	4,341			4,341							4,341		4,341
Solano County Water Agency	33,530			33,530							33,530		33,530
South Bay Area													
Alameda County Flood Control and Water Control District, Zone 7	27,522			27,522							27,522	12,850 [b]	40,372
Alameda County Water District	14,063		10,000	24,063							24,063	10,959 [c]	35,022
Santa Clara Valley Water District	60,601		35,000	95,601							95,601		95,601
San Joaquin Valley Area													
Castaic Lake WA	4,870			4,870							4,870		4,870
County of Kings	0			0							0		0
Dudley Ridge WD	43,153			43,153	7,141				1,529	11,015	62,838		62,838
Empire West Side ID	0			0							0		0
Kern County WA	842,396 [d]	229,362 [e]		1,071,758	10,264						1,082,022	15,795 [f]	1,097,817
Oak Flat WD	5,238			5,238							5,238		5,238
Tulare Lake Basin WSD	17,656	5,100 [g]		22,756	1,213						23,969		23,969
Central Coastal Area													
San Luis Obispo County FCWCD	1,099			1,099							1,099		1,099
Santa Barbara County FCWCD	7,439			7,439							7,439		7,439
Southern California Area													
Antelope Valley-East Kern WA	61,752	1,336 [h]		63,088	641						63,729		63,729
Castaic Lake WA	21,586		1,256 [i]	22,842							22,842		22,842
Coachella Valley WD	23,100			23,100						35,000	58,100	10,240 [j]	68,340
Crestline-Lake Arrowhead WA	651			651							651	487 [k]	1,138
Desert WA	38,100			38,100						15,000	53,100	16,890 [l]	69,990
Littlerock Creek ID	444			444							444		444
Metropolitan WDSC	556,011 [m]	37,000 [n]	126,486	719,497							719,497	28,213 [o]	747,710
Mojave WA	9,038	2,000 [p]		11,038							11,038	1,600 [q]	12,638
Palmdale WD	11,861			11,861							11,861		11,861
San Bernardino Valley MWD	9,654	2,313 [r]		11,967							11,967		11,967
San Gabriel Valley MWD	16,002 [s]			16,002	2,173						18,175		18,175
San Gorgonio Pass WA	0			0							0		0
Ventura County FCD	1,850			1,850							1,850		1,850
Totals	**1,813,378**	**277,111**	**172,742**	**2,263,231**	**21,432**	**0**	**0**	**0**	**1,529**	**61,015**	**2,347,207**	**97,034**	**2,444,241**

[a] Includes local, general wheeling, USBR exchange, and flood water.
[b] Includes 667 acre-feet general wheeling and 12,183 acre-feet local water.
[c] 10,959 acre-feet local water.
[d] Includes 27,136 acre-feet of ground demonstration water.
[e] Includes 5,800 acre-feet transferred from DRWD, and 184,542 and 39,020 acre-feet exchanged and transferred to WWD, respectively.
[f] Includes 5,352 acre-feet flood water and 10,443 acre-feet exchanged from USBR through WWD.
[g] Includes 1,500 acre-feet and 100 acre-feet transferred from KCWA and SLOCFCWCD, respectively, and 3,500 acre-feet transferred to WWD.
[h] Includes 1,336 acre-feet transferred from MWA.
[i] 1,256 acre-feet flexible storage payback water.
[j] 10,240 acre-feet flood water.
[k] 487 acre-feet local water.
[l] 16,890 acre-feet flood water.
[m] Includes 49,411 acre-feet bypass water.
[n] 37,000 acre-feet exchanged to USBR.
[o] Includes 25,900 acre-feet exchanged from USBR, and 2,313 acre-feet local water from SBVMWD.
[p] 2,000 acre-feet exchanged from SCWA.
[q] 1,600 acre-feet general wheeling.
[r] 2,313 acre-feet exchanged from MWD.
[s] Includes 2 acre-feet advanced water.

Table 9-4
Water Delivered in 1997, by Month
(Acre-Feet)

Contracting Agency and Type of Service	Month												1997 Total Deliveries	1997 Contract Entitlement
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Feather River Area														
City of Yuba City														
Entitlement water	0	0	0	0	0	0	534	471	0	0	0	0	1,005	9,600
County of Butte														
Entitlement water	1	1	5	1	0	2	1	1	0	14	83	76	185	1,200
Plumas County Flood Control and Water Conservation District														
Entitlement water	1	1	1	2	41	34	63	54	27	6	1	0	231	1,350
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	0	0	0	0	1	0	1	1	0	1	0	0	4	
Last Chance Creek Water District														
Regulated delivery of local supply	0	0	0	0	252	2,742	3,358	4,199	1,640	399	0	0	12,590	
Thermalito Irrigation District														
Regulated delivery of local supply	0	0	0	0	95	193	410	362	300	159	112	99	1,730	
Oroville-Wyandotte Irrigation District														
Regulated delivery of local supply	112	113	296	723	1,100	1,070	1,140	1,170	1,010	474	146	137	7,491	
Western Canal Water District														
Regulated delivery of local supply	0	0	0	13,223	55,675	51,496	58,132	36,988	4,720	15,292	22,305	7,594	265,425	
Joint Water Districts Board														
Regulated delivery of local supply	5,350	0	8,140	59,890	116,990	109,807	119,800	91,234	35,230	48,850	44,610	37,710	677,611	
Oswald WD														
Regulated delivery of local supply	0	0	0	14	333	426	354	94	27	0	0	10	1,258	
Tudor Mutual Water Company														
Regulated delivery of local supply	0	0	0	169	1,073	1,099	1,368	467	324	0	0	0	4,500	
Garden Highway Water Company														
Regulated delivery of local supply	0	0	0	1,248	3,060	3,119	3,343	2,697	759	98	0	0	14,324	
Plumas Mutual Water Company														
Regulated delivery of local supply	0	0	0	123	1,797	1,568	1,889	1,697	1,208	0	0	0	8,282	
SWP	2	2	6	3	42	36	599	527	27	21	84	76	1,425	
Non-SWP	5,462	113	8,436	75,390	180,375	171,520	189,794	138,908	45,218	65,272	67,173	45,550	993,211	
Area Total	**5,464**	**115**	**8,442**	**75,393**	**180,417**	**171,556**	**190,393**	**139,435**	**45,245**	**65,293**	**67,257**	**45,626**	**994,636**	**12,150**
North Bay Area														
Napa County Flood Control and Water Conservation District														
Entitlement water	88	86	139	145	347	310	484	480	194	608	741	719	4,341	11,065
Solano County Water Agency														
Entitlement water	94	150	130	817	2,458	2,673	2,870	2,903	1,391	1,208	787	548	16,029	38,250
Entitlement water to Benicia	849	796	660	577	1,222	1,290	1,337	1,385	1,163	938	740	764	11,721	
Entitlement water to Vallejo	0	0	182	381	705	826	1,040	830	733	467	492	124	5,780	
Exchange entitlement water to MWA*	0	0	0	0	0	0	0	0	0	0	1,100	900	2,000	
Agency Total (* Exchange entitlement water excluded)	943	946	972	1,775	4,385	4,789	5,247	5,118	3,287	2,613	2,019	1,436	33,530	
SWP	1,031	1,032	1,111	1,920	4,732	5,099	5,731	5,598	3,481	3,221	2,760	2,155	37,871	
Area Total	**1,031**	**1,032**	**1,111**	**1,920**	**4,732**	**5,099**	**5,731**	**5,598**	**3,481**	**3,221**	**2,760**	**2,155**	**37,871**	**49,315**
South Bay Area														
Alameda County Flood Control and Water Conservation District, Zone 7														
Entitlement water	6	0	0	0	2,860	4,744	5,603	5,257	3,895	3,247	1,520	390	27,522	46,000
General Wheeling	0	0	0	0	0	0	0	0	667	0	0	0	667	
Local water	1,616	1,450	2,425	3,243	2,020	58	0	0	15	0	258	1,098	12,183	
Agency Total	1,622	1,450	2,425	3,243	4,880	4,802	5,603	5,257	4,577	3,247	1,778	1,488	40,372	
Alameda County Water District														
Entitlement water	0	0	0	0	0	468	2,132	2,836	2,446	2,062	2,018	2,101	14,063	42,000
Stored entitlement water	0	0	0	0	0	0	10,000	0	0	0	0	0	10,000	
Local water	1,785	1,633	2,054	1,876	2,111	1,500	0	0	0	0	0	0	10,959	
Agency Total	1,785	1,633	2,054	1,876	2,111	1,968	12,132	2,836	2,446	2,062	2,018	2,101	35,022	
Santa Clara Valley Water District														
Entitlement water	141	3,999	6,586	3,937	5,505	4,476	7,330	7,458	7,395	5,934	5,037	2,803	60,601	100,000
Stored entitlement water	0	0	0	0	0	35,000	0	0	0	0	0	0	35,000	
Agency Total	141	3,999	6,586	3,937	5,505	39,476	7,330	7,458	7,395	5,934	5,037	2,803	95,601	

Table 9-4
Water Delivered in 1997, by Month
(Acre-Feet)

Contracting Agency and Type of Service	Month												1997 Total Deliveries	1997 Contract Entitlement
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	0	1	5	9	20	24	29	23	21	12	6	5	155	
SWP	147	4,000	6,591	3,946	8,385	44,712	25,094	15,574	13,757	11,255	8,581	5,299	147,341	
Non-SWP	3,401	3,083	4,479	5,119	4,131	1,558	0	0	682	0	258	1,098	23,809	
Area Total	**3,548**	**7,083**	**11,070**	**9,065**	**12,516**	**46,270**	**25,094**	**15,574**	**14,439**	**11,255**	**8,839**	**6,397**	**171,150**	**188,000**
San Joaquin Valley Area														
Castaic Lake Water Agency														
Entitlement water	0	0	674	569	871	1,167	957	632	0	0	0	0	4,870	12,700
County of Kings														
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	4,000
Dudley Ridge Water District														
Entitlement water	4	513	1,182	3,501	6,033	9,183	10,777	8,403	885	975	616	1,081	43,153	53,370
Interruptible entitlement water	114	318	6,359	350	0	0	0	0	0	0	0	0	7,141	
Purchase Pool A entitlement water	0	0	0	0	0	1,529	0	0	0	0	0	0	1,529	
Purchase Pool B entitlement water	0	0	0	0	0	471	3,000	3,000	2,544	2,000	0	0	11,015	
Transfer entitlement water to KCWA*	0	0	0	0	0	0	0	0	3,000	2,300	500	0	5,800	
Agency Total (* excluded water)	118	831	7,541	3,851	6,033	11,183	13,777	11,403	3,429	2,975	616	1,081	62,838	
Empire West Side Irrigation District														
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	3,000
Kern County Water Agency														
Entitlement water	402	4,087	42,557	59,887	100,221	144,890	197,688	155,304	26,734	22,643	24,970	35,877	815,260	1,112,730
Interruptible entitlement water	552	1,069	8,643	0	0	0	0	0	0	0	0	0	10,264	
Ground Demonstration entitlement water	0	0	0	0	0	0	0	27,136	0	0	0	0	27,136	
Flood water	1,494	3,858	0	0	0	0	0	0	0	0	0	0	5,352	
Transfer entitlement water from DRWD	0	0	0	0	0	0	0	0	3,000	2,300	500	0	5,800	
Exchange water from USBR through WWD	4,044	6,399	0	0	0	0	0	0	0	0	0	0	10,443	
Exchange entitlement water to WWD *	0	0	0	10,443	0	500	92,500	65,000	4,661	4,086	4,195	3,157	184,542	
Transfer entitlement water to WWD *	0	0	0	0	0	0	39,020	0	0	0	0	0	39,020	
Transfer entitlement water to TLBWSD *	0	0	0	0	0	0	600	600	0	150	150	0	1,500	
Agency Total (* excluded water)	6,492	15,413	51,200	59,887	100,221	144,890	197,688	182,440	29,734	24,943	25,470	35,877	874,255	
Oak Flat Water District														
Entitlement water	0	0	228	721	846	1,032	1,070	607	476	185	71	2	5,238	5,700
Tulare Lake Basin Water Storage District														
Entitlement water	32	26	0	265	496	1,591	1,523	2,728	1,392	948	2,506	6,149	17,656	118,500
Interruptible entitlement water	0	0	1,213	0	0	0	0	0	0	0	0	0	1,213	
Transfer entitlement water from KCWA	0	0	0	0	0	0	600	600	0	150	150	0	1,500	
Transfer entitlement water from SLOCFCWCD	0	0	0	0	0	0	0	0	0	0	100	0	100	
Transfer entitlement water to WWD *	0	0	0	0	0	3,500	0	0	0	0	0	0	3,500	
Agency Total (* excluded water)	32	26	1,213	265	496	1,591	2,123	3,328	1,392	1,098	2,756	6,149	20,469	
Westlands Water District														
Transfer entitlement water from KCWA	0	0	0	0	0	0	39,020	0	0	0	0	0	39,020	
Transfer entitlement water from TLBWSD	0	0	0	0	0	3,500	0	0	0	0	0	0	3,500	
Exchange entitlement water from KCWA	0	0	0	10,443	0	500	92,500	65,000	4,661	4,086	4,195	3157	184,542	
Transfer DCVCWLNG water from Lower Tule River [a]	2,500	0	0	0	0	0	0	5,000	0	5,238	0	0	12,738	
Transfer DCVCWLNG water from PID [a]	2,500	0	0	0	0	0	0	5,000	0	5,238	0	0	12,738	
USBR exchange water to KCWA *	4,044	6,399	0	0	0	0	0	0	0	0	0	0	10,443	
Agency Total (* excluded water)	5,000	0	0	10,443	0	4,000	131,520	75,000	4,661	14,562	4,195	3,157	252,538	
Department of Fish and Game / Parks and Recreation														
DFG's recreation/fish and wildlife water	8	0	18	30	41	18	6	4	10	76	38	21	270	
Parks and Recreation's recreation/fish and wildlife water	2	1	6	8	14	11	18	10	12	6	4	1	93	
Agency Total	10	1	24	38	55	29	24	14	22	82	42	22	363	
SWP	1,114	6,014	60,880	75,774	108,522	163,892	347,159	263,424	39,714	33,369	33,150	46,288	1,179,300	
Non-SWP	10,538	10,257	0	0	0	0	0	10,000	0	10,476	0	0	41,271	

Table 9-4
Water Delivered in 1997, by Month
(Acre-Feet)

Contracting Agency and Type of Service	Month												1997 Total Deliveries	1997 Contract Entitlement
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Area subtotal	11,652	16,271	60,880	75,774	108,522	163,892	347,159	273,424	39,714	43,845	33,150	46,288	1,220,571	1,310,000
San Joaquin Valley Area														
CVP Water Conveyed														
Annual Contracts														
Musco Olive Products, Inc.	26	26	32	31	31	38	17	6	40	40	32	24	343	
Veterans Administration Cemetery	1	1	1	3	3	3	7	3	3	4	2	2	33	
Subtotal	27	27	33	34	34	41	24	9	43	44	34	26	376	
Cross Valley Canal Contracts														
DCVCWLNG water to WWD from Lower Tule River * [a]	2,500	0	0	0	0	0	0	5,000	0	5,238	0	0	12,738	
DCVCWLNG water to WWD from PID * [a]	2,500	0	0	0	0	0	0	5,000	0	5,238	0	0	12,738	
Subtotal (* excluded water)	0	0	0	0	0	0	0	0	0	0	0	0	0	
U.S. Bureau Of Reclamation														
Federal wheeling [b]	0	0	0	0	0	0	0	2,270	2,630	4,103	2,269	0	11,272	
Federal wheeling for Tracy Pumping Plant outage	0	57,497	31,000	0	0	0	0	0	0	0	0	0	88,497	
Federal fish and wildlife enhancement water (CVPIA)	0	0	0	0	0	0	16,000	4,000	0	0	0	0	20,000	
Makeup water for exports deferred	0	0	0	0	0	0	0	0	41,745	26,820	0	0	68,565	
Recreation/fish and wildlife water (San Luis)	6	2	18	35	42	25	18	13	18	68	34	18	297	
Exchange entitlement water from MWD	0	0	0	0	0	0	0	37,000	0	0	0	0	37,000	
Exchange water to MWD * [c]	0	0	0	0	0	0	0	0	0	0	14,800	11,100	25,900	
Subtotal (* excluded water)	6	57,499	31,018	35	42	25	16,018	43,283	44,393	30,991	2,303	18	225,631	
SWP	0	0	0	0	0	0	0	37,000	0	0	0	0	37,000	
Non-SWP	33	57,526	31,051	69	76	66	16,042	6,292	44,436	31,035	2,337	44	189,007	
San Joaquin Valley Area subtotal	33	57,526	31,051	69	76	66	16,042	43,292	44,436	31,035	2,337	44	226,007	
SWP	1,114	6,014	60,880	75,774	108,522	163,892	347,159	300,424	39,714	33,369	33,150	46,288	1,216,300	
Non-SWP	10,571	67,783	31,051	69	76	66	16,042	16,292	44,436	41,511	2,337	44	230,278	
Area Total	**11,685**	**73,797**	**91,931**	**75,843**	**108,598**	**163,958**	**363,201**	**316,716**	**84,150**	**74,880**	**35,487**	**46,332**	**1,446,578**	**1,310,000**
Central Coastal Area														
San Luis Obispo County Flood Control and Water Conservation District														
Entitlement water	0	0	0	0	0	0	0	20	144	354	269	312	1,099	6215
Transfer entitlement water to TLBWSD *	0	0	0	0	0	0	0	0	0	0	100	0	100	
Agency Total (* excluded water)	0	0	0	0	0	0	0	20	144	354	269	312	1,099	
Santa Barbara County Flood Control and Water Conservation District														
Entitlement water	0	0	0	0	0	0	0	828	1,369	1,864	1,526	1,852	7,439	38,986
SWP	0	0	0	0	0	0	0	848	1,513	2,218	1,795	2,164	8,538	
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	
Area Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**848**	**1,513**	**2,218**	**1,795**	**2,164**	**8,538**	**45,201**
Southern California Area														
Antelope Valley-East Kern Water Agency														
Entitlement water	1,651	1,641	4,511	5,939	7,879	8,905	9,124	8,448	6,174	4,334	1,716	1,430	61,752	138,400
Interruptible entitlement water	205	185	205	46	0	0	0	0	0	0	0	0	641	
Transfer entitlement water from MWA	79	40	116	94	117	187	163	186	131	91	68	64	1,336	
Agency Total	1,935	1,866	4,832	6,079	7,996	9,092	9,287	8,634	6,305	4,425	1,784	1,494	63,729	
Castaic Lake Water Agency														
Entitlement water	879	1,258	1,247	1,486	2,096	2,658	3,207	2,998	2,682	2,276	527	272	21,586	41,500
Flexible storage payback entitlement water	0	0	0	0	0	0	0	0	0	0	645	611	1,256	
Agency Total	879	1,258	1,247	1,486	2,096	2,658	3,207	2,998	2,682	2,276	1,172	883	22,842	

Table 9-4
Water Delivered in 1997, by Month
(Acre-Feet)

Contracting Agency and Type of Service	Month												1997 Total Deliveries	1997 Contract Entitlement
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Coachella Valley Water District														
Entitlement water	1,620	1,214	2,024	2,027	2,027	2,027	2,027	2,027	2,027	2,027	2,027	2,026	23,100	23,100
Flood water	2,659	7,581	0	0	0	0	0	0	0	0	0	0	10,240	
Purchase Pool B entitlement water	0	0	0	0	8,964	8,964	8,964	1,620	1,622	1,622	1,622	1,622	35,000	
Agency Total	4,279	8,795	2,024	2,027	10,991	10,991	10,991	3,647	3,649	3,649	3,649	3,648	68,340	
Crestline-Lake Arrowhead Water Agency														
Entitlement water	0	0	0	0	0	0	96	169	129	91	80	86	651	5,800
Local water	72	46	54	57	107	102	49	0	0	0	0	0	487	
Agency Total	72	46	54	57	107	102	145	169	129	91	80	86	1,138	
Desert Water Agency														
Entitlement water	2,659	2,001	3,339	3,343	3,345	3,345	3,345	3,345	3,345	3,345	3,345	3,343	38,100	38,100
Flood water	4,386	12,504	0	0	0	0	0	0	0	0	0	0	16,890	
Purchase Pool B entitlement water	0	0	0	0	541	541	540	2,674	2,676	2,676	2,676	2,676	15,000	
Agency Total	7,045	14,505	3,339	3,343	3,886	3,886	3,885	6,019	6,021	6,021	6,021	6,019	69,990	
Littlerock Creek Irrigation District														
Entitlement water	0	0	0	68	64	75	78	71	54	34	0	0	444	2,300
Metropolitan Water District of Southern California														
Entitlement water	7,851	3,726	23,903	78,517	65,460	59,603	52,858	67,978	70,054	51,213	18,912	6,525	506,600	2,011,500
Bypass entitlement water	0	0	0	0	12,365	10,306	18,531	8,177	9	0	0	23	49,411	
Stored entitlement water	0	7,162	25,522	24,392	20,821	0	5,000	5,000	19,650	12,673	4,780	1,486	126,486	
Exchange water from USBR [c]	0	0	0	0	0	0	0	0	0	0	14,800	11,100	25,900	
Exchange local water from SBVMWD	69	1,494	750	0	0	0	0	0	0	0	0	0	2,313	
Exchange entitlement water to SBVMWD *	0	0	0	0	0	0	0	0	2,089	224	0	0	2,313	
Exchange entitlement water to USBR *	0	0	0	0	0	0	0	37,000	0	0	0	0	37,000	
Agency Total (* excluded water)	7,920	12,382	50,175	102,909	98,646	69,909	76,389	81,155	89,713	63,886	38,492	19,134	710,710	
Mojave Water Agency														
Entitlement water	891	584	692	572	638	687	948	853	744	1,191	859	379	9,038	50,800
General Wheeling	0	0	0	0	0	0	283	1,317	0	0	0	0	1,600	
Exchange entitlement water from SCWA	0	0	0	0	0	0	0	0	0	0	1,100	900	2,000	
Transfer entitlement water to AVEKWA *	79	40	116	94	117	187	163	186	131	91	68	64	1,336	
Agency Total (* excluded water)	891	584	692	572	638	687	1,231	2,170	744	1,191	1,959	1,279	12,638	
Palmdale Water District														
Entitlement water	1,316	12	655	517	787	1,936	2,148	2,172	995	849	264	210	11,861	17,300
San Bernardino Valley Municipal Water District														
Entitlement water	100	0	119	541	1,003	1,388	1,932	2,428	0	1,216	864	63	9,654	102,600
Exchange entitlement water from MWD	0	0	0	0	0	0	0	0	2,089	224	0	0	2,313	
Exchange local water to MWD *	69	1,494	750	0	0	0	0	0	0	0	0	0	2,313	
Agency Total (* excluded water)	100	0	119	541	1,003	1,388	1,932	2,428	2089	1,440	864	63	11,967	
San Gabriel Valley Municipal Water District														
Entitlement water	0	0	0	694	2,472	2,430	2,513	2,318	2,868	2,705	0	0	16,000	28,800
Advanced entitlement water	0	0	0	0	0	0	0	0	0	2	0	0	2	
Interruptible entitlement water	2,173	0	0	0	0	0	0	0	0	0	0	0	2,173	
Agency Total	2,173	0	0	694	2,472	2,430	2,513	2,318	2,868	2,707	0	0	18,175	
San Gorgonio Pass Water Agency														
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ventura County Flood Control District														
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	1,850	1,850	20,000
United Water CD														
Regulated delivery of local supply	0	0	9,477	1,006	0	0	0	0	0	0	0	0	10,483	
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	97	68	146	172	314	397	510	396	391	613	415	105	3,624	
SWP	19,521	17,891	62,479	118,408	128,893	103,449	111,984	110,860	115,640	87,182	39,900	23,671	939,878	
Non-SWP	7,186	21,625	10,281	1,063	107	102	332	1,317	0	0	14,800	11,100	67,913	
Area Total	**26,707**	**39,516**	**72,760**	**119,471**	**129,000**	**103,551**	**112,316**	**112,177**	**115,640**	**87,182**	**54,700**	**34,771**	**1,007,791**	**2,480,200**

Table 9-4
Water Delivered in 1997, by Month
(Acre-Feet)

Contracting Agency and Type of Service	Month												1997 Total Deliveries	1997 Contract Entitlement
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
SWP Water														
SWP entitlement water														
Agriculture and M&I entitlement water	17,736	19,299	87,992	163,549	205,449	253,624	309,308	280,789	135,420	109,329	68,739	68,094	1,719,328	4,084,866
Interruptible entitlement water	3,044	1,572	16,420	396	0	0	0	0	0	0	0	0	21,432	
Transfer entitlement water	79	40	116	94	117	3,687	39,783	786	3,131	2,541	818	64	51,256	
Exchange entitlement water	0	0	0	10,443	0	500	92,500	102,000	6,750	4,310	5,295	4,057	225,855	
Stored entitlement water	0	7,162	25,522	24,392	20,821	35,000	15,000	5,000	19,650	12,673	4,780	1,486	171,486	
Benicia entitlement water	849	796	660	577	1,222	1,290	1,337	1,385	1,163	938	740	764	11,721	
Vallejo entitlement water	0	0	182	381	705	826	1,040	830	733	467	492	124	5,780	
Purchase Pool A entitlement water	0	0	0	0	0	1,529	0	0	0	0	0	0	1,529	
Purchase Pool B entitlement water	0	0	0	0	9,505	9,976	12,504	7,294	6,842	6,298	4,298	4,298	61,015	
Advanced entitlement water (1998 water delivered in1997)	0	0	0	0	0	0	0	0	0	2	0	0	2	
Bypass entitlement water	0	0	0	0	12,365	10,306	18,531	8,177	9	0	0	23	49,411	
Ground demonstration entitlement water	0	0	0	0	0	0	0	27,136	0	0	0	0	27,136	
Flexible storage payback water	0	0	0	0	0	0	0	0	0	0	645	611	1,256	
Subtotal (Entitlement water)	21,708	28,869	130,892	199,832	250,184	316,738	490,003	433,397	173,698	136,558	85,807	79,521	2,347,207	
SWP entitlement-related water														
Recreation/fish and wildlife water	107	70	175	219	390	450	564	434	434	708	463	132	4,146	
Subtotal (entitlement-related water)	107	70	175	219	390	450	564	434	434	708	463	132	4,146	
Subtotal (SWP water)	21,815	28,939	131,0767	200,051	250,574	317,188	490,567	433,831	174,132	137,266	86,270	79,653	2,351,353	
Nonentitlement Water														
Other water														
Wheeling local water	8,935	3,242	22,446	81,572	184,613	173,180	189,843	138,908	45,233	65,272	67,431	46,648	1,027,323	
General wheeling	0	0	0	0	0	0	283	1,317	667	0	0	0	2,267	
Exchange local water	69	1,494	750	0	0	0	0	0	0	0	0	0	2,313	
Flood water	8,539	23,943	0	0	0	0	0	0	0	0	0	0	32,482	
Subtotal (other water)	17,543	28,679	23,196	81,572	184,613	173,180	190,126	140,225	45,900	65,272	67,431	46,648	1,064,385	
CVP Water														
Makeup water for exports deferred	0	0	0	0	0	0	0	0	41,745	26,820	0	0	68,565	
Federal wheeling for Tracy Pumping Plant outage	0	57,497	31,000	0	0	0	0	0	0	0	0	0	88,497	
Transferred DCVCWLNG water [a, d]	5,000	0	0	0	0	0	0	10,000	0	10,476	0	0	25,476	
Federal fish and wildlife enhancement water (CVPIA)	0	0	0	0	0	0	16,000	4,000	0	0	0	0	20,000	
Exchange water (to MWD)	0	0	0	0	0	0	0	0	0	0	14,800	11,100	25,900	
Exchange water (to KCWA through WWD)	4,044	6,399	0	0	0	0	0	0	0	0	0	0	10,443	
Conveying CVP water annual contract (Federal Wheeling)	27	27	33	34	34	41	24	9	43	44	34	26	376	
Conveying CVP water (Kern National Wildlife Refuge USBR)	0	0	0	0	0	0	0	2,270	2,630	4,103	2,269	0	11,272	
Conveying CVP water recreation/fish and wildlife water (San Luis)	6	2	18	35	42	25	18	13	18	68	34	18	297	
Subtotal (CVP water)	**9,077**	**63,925**	**31,051**	**69**	**76**	**66**	**16,042**	**16,292**	**44,436**	**41,511**	**17,137**	**11,144**	**250,826**	
Subtotal (nonentitlement water)	**26,620**	**92,604**	**54,247**	**81,641**	**184,689**	**173,246**	**206,168**	**156,517**	**90,336**	**106,783**	**84,568**	**57,792**	**1,315,211**	
Grand Total	**48,435**	**121,543**	**185,319**	**281,692**	**435,263**	**490,434**	**696,735**	**590,348**	**264,468**	**244,049**	**170,838**	**137,445**	**3,666,564**	**4,084,866**

[a] DCVCWLNG is water wheeled by the Department directly to specific Cross Valley contractors.

[b] Kern National Wildlife Refuge USBR.

[c] Remainder to be delivered in 1998.

[d] DCVCWLNG water transferred to WWD from Lower Tule River and PID.

Table 9-5
Total Amounts of Annual Water Entitlements and Water Conveyed, by Type, 1962-97
(Acre-Feet)

Year	Annual Entitlements According to Long-Term Water Supply Contract							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 [a] (8)	Surplus and Unscheduled Water [b] (9)	Other Water [c] (10)	Feather River Diversions [d] (11)	Recreation Water (12)	Subtotal (13)	Initial Fill Water (14)	Operational Losses and Storage Changes [e] (15)	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	81,050	0	0	191,500	171,709	121,534	14,777	866,926	0	1,174,946	498,926	117,906	1,791,778
1969	620	0	98,700	168,075	0	0	267,395	193,020	72,397	18,829	794,374	0	1,078,620	510,614	72,196	1,661,430
1970	700	0	114,200	207,700	0	0	322,600	233,993	133,024	38,080	759,759	0	1,164,856	23,947	2,435	1,191,238
1971	890	0	116,200	258,500	0	0	375,590	357,340	296,019	44,119	778,362	8	1,475,848	7,853	5,812	1,489,513
1972	970	0	118,300	420,766	0	201,723	741,759	611,801	423,964	66,638	817,398	6,489	1,926,290	100,274	53,062	2,079,626
1973	1,100	0	120,400	392,352	0	472,400	986,252	694,388	296,416	42,511	800,743	1,155	1,835,213	204,638	53,798	2,093,649
1974	1,230	0	122,400	470,350	0	588,220	1,182,200	874,077	417,676	46,224	911,613	2,118	2,251,708	237,554	10,657	2,499,919
1975	1,610	0	124,500	556,509	0	704,250	1,386,869	1,223,990	622,902	63,793	862,218	3,377	2,776,280	103,352	(94,606)	2,785,026
1976	1,990	0	126,500	555,117	0	824,780	1,508,387	1,373,002	580,110	115,217	946,440	1,745	3,016,514	61,122	(681,025)	2,396,611
1977	2,420	0	128,600	594,100	0	942,201	1,667,321	574,155	0	389,065	581,994	1,111	1,546,325	0	(131,151)	1,415,174
1978	1,850	0	130,700	647,262	0	1,038,222	1,818,034	1,452,699	16,914	121,225	786,517	1,691	2,379,046	64,443	717,370	3,160,859
1979	2,130	0	132,700	715,385	0	1,177,873	2,028,088	1,659,896	648,389	187,630	882,549	1,766	3,380,230	12,302	(83,430)	3,309,102
1980	1,810	500	134,800	770,800	1,946	1,304,914	2,214,770	1,529,749	404,557	46,459	875,045	2,131	2,857,941	0	(26,606)	2,831,335
1981	1,940	650	137,000	830,700	2,813	1,419,365	2,392,468	1,909,562	908,428	279,161	838,557	4,688	3,940,396	0	(802,263)	3,138,133
1982	1,970	800	139,200	889,200	5,626	1,537,749	2,574,545	1,750,024	215,873	154,882	776,330	4,646	2,901,755	0	480,752	3,382,507
1983	2,000	950	141,400	880,648	8,439	1,668,557	2,701,994	1,184,869	13,019	181,453	602,905	7,849	1,990,095	0	(90,997)	1,899,098
1984	3,630	1,100	143,600	991,911	12,698	1,731,398	2,884,337	1,588,619	262,917	381,024	832,332	7,040	3,071,932	0	(140,182)	2,931,750
1985	3,760	1,250	145,800	1,031,749	21,138	1,852,149	3,055,846	1,995,453	307,672	404,842	870,008	4,033	3,582,008	0	92,885	3,674,893
1986	4,190	1,400	148,100	1,139,200	28,210	1,971,190	3,292,290	1,995,636 [f]	36,620 [g]	193,606	791,737	3,865	3,021,464	0	284,380	3,305,844
1987	4,620	1,550	150,300	1,201,200	35,204	2,091,241	3,484,115	2,130,086 [h]	114,907	377,592	831,947	7,672	3,462,204	0	(390,413)	3,071,791
1988	5,060	15,471	152,500	1,258,800	43,722	2,212,782	3,688,335	2,385,122 [i]	0	507,076	794,834	4,889	3,691,921	0	(92,850)	3,599,071
1989	5,500	24,615	156,700	1,303,100	56,342	2,411,933	3,958,190	2,853,747 [j]	0	474,559	830,500	8,135	4,166,941	0	447,917	4,614,858
1990	6,040	28,190	160,900	1,355,000	70,486	2,487,900	4,108,516	2,582,151 [k]	90	424,697	875,099	9,262	3,891,299	0	(528,869)	3,362,430
1991	11,880	29,590	166,400	1,355,000	70,486	2,497,500	4,130,856	549,113 [l]	3,521	551,051	565,395	4,879	1,673,959	0	167,435	1,841,394 0
1992	11,920	32,010	171,900	1,342,300	70,486	2,510,200	4,138,816	1,471,454 [m]	1,156	144,789	613,978	2,605	2,233,982	0	(63,541)	2,170,441
1993	11,960	34,620	177,400	1,342,300	70,486	2,510,200	4,146,966	2,315,235		254,854	822,589	2,609	3,395,287	0	726,123	4,121,410
1994	12,000	37,215	182,000	1,342,300	70,486	2,510,200	4,154,201	1,861,976		236,739	874,018	8,200	2,980,933	0	(295,405)	2,685,528
1995	12,050	44,030	184,000	1,342,300	70,486	2,510,200	4,163,066	2,031,423	0	78,425	860,077	2,575	2,972,500	0	69,536	3,042,036
1996	12,100	48,225	186,000	1,301,630	70,486	2,492,900	4,111,341	2,543,472	0	251,391	934,997	3,907	3,733,767	86	491,555	4,225,408
1997	12,150	49,315	188,000	1,310,000	44,871	2,480,200	4,084,536	2,347,207	0	322,000	993,211	4,146	3,666,564	527	(11,806)	3,655,285
Total	**140,640**	**351,481**	**4,320,638**	**26,055,304**	**754,411**	**44,150,247**	**75,772,721**	**44,456,506**	**5,898,105**	**6,651,598**	**24,372,452**	**112,591**	**81,491,252**	**1,834,310**	**298,435**	**83,608,408**

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

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

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

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

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

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

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

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

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

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

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

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

[m] Includes 92,282 acre-feet of 1991 entitlement water delivered in 1992: 3484 acre-feet of makeup water: and 72,000 acre-feet recaptured from water storage (including 57,171 acre-feet of Groundwater Demonstration Program water).

Article 14(b) Water. No Article 14(b) water was delivered in 1997. (See column 8.)

Purchase Pool A Water. Column 9 shows 1,529 acre-feet of Purchase Pool A water delivered to DRWD in 1997.

Purchase Pool B Water. Column 10 shows 61,015 acre-feet of Purchase Pool B water delivered to three long-term water supply contractors in 1997.

Total Entitlement Water Delivered. Column 11 shows all entitlement water delivered in 1997, a total of 2,347,207 acre-feet. This amount includes 227,062 acre-feet of entitlement water transferred to or exchanged with WWD, 37,000 acre-feet of entitlement exchanged with USBR, and 62,544 acre-feet of purchase pool water.

Other Water Deliveries. Column 12 includes deliveries of water other than entitlement water, such as deliveries of nonproject water, to long-term water contractors. Nonproject water is generally local water that a SWP contractor has a water right to, or water purchased from or exchanged with non-SWP agencies. The water is conveyed by the Department and in some instances stored in SWP facilities under special agreements for future deliveries.

In 1997, other water deliveries totaled 97,034 acre-feet.

Total Deliveries. Column 13 shows total amounts of water delivered to long-term contractors. In 1997, the SWP delivered 2,444,241acre-feet to 26 long-term contractors. This amount included 2,347,207 acre-feet of entitlement water and 97,034 acre-feet of nonproject water.

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

In 1997, 263,759 acre-feet of carryover water was approved for future delivery.

Water Delivered in 1997, by Month

During 1997, the SWP provided water service to 42 agencies, including 26 long-term water contractors. Those agencies and the amounts of water delivered to them by month are listed in Table 9-4.

This section and the accompanying table summarize water deliveries for 1997. Information about those deliveries is categorized as State Water Project water and nonproject water.

State Water Project Water. State Water Project water is classified into the following categories:

Entitlement water
- current year entitlement (1997)
- interruptible entitlement (1997)
- transfer and exchange entitlement (1997)
- carryover entitlement (no 1996 carryover water was delivered in 1997)
- Benicia and Vallejo entitlement (1997)
- stored entitlement (1997)
- Pool A entitlement (1997)
- Pool B entitlement (1997)

Recreation and fish and wildlife water
- enhancement
- mitigation

Operational flood release water
- operational flood release

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

In 1997, SWP water was delivered in the following classifications and amounts.

Entitlement Water

A total of 2,347,207 acre-feet of 1997 entitlement water was delivered to 26 long-term contractors.

Transfers and Exchanges of Entitlement Water. During 1997, a total of 277,111 acre-feet of entitlement water was transferred or exchanged between nine SWP long-term contractors and two non-SWP water agency as follows:

- DRWD transferred to KCWA, 5,800 acre-feet;
- KCWA transferred to WWD, 39,020 acre-feet;
- KCWA exchanged to WWD, 184,542 acre-feet;
- KCWA transferred to TLBWSD, 1,500 acre-feet;
- TLBWSD transferred to WWD, 3,500 acre-feet;
- SLOCFCWCD transferred to TLBWSD, 100 acre-feet;
- MWA transferred to AVEKWA, 1,336 acre-feet;
- MWD exchanged to USBR, 37,000 acre-feet;
- SCWA exchanged to MWA, 2,000 acre-feet; and
- MWD exchanged to SBVMWD, 2,313 acre-feet.

Carryover Entitlement Water. No 1996 entitlement water was approved to be carried over into 1997, since all of the SWP storage facilities were needed for project water.

Interruptible Entitlement Water. The interruptible entitlement water program allows a contractor to take delivery of water over the approved and scheduled allocations for the current year. Interruptible water is available for delivery on a short-term basis as determined by the Department, when scheduled project demands are being delivered and operational requirements for project water deliveries, water quality, and other requirements are being met.

In 1997, five contractors participated in the program. A total of 21,432 acre-feet of interruptible water was delivered to DRWD, KCWA, TLBWSD, AVEKWA, and SGVMWD.

Water for Recreation and Fish and Wildlife. A total of 4,146 acre-feet of SWP water was conveyed for recreational use and enhancement of fish and wildlife.

Recreational Use. The SWP delivered 755 acre-feet of water for facilities at Lake Del Valle, O'Neill Forebay, Silverwood Lake, and Lake Perris. In addition, 3,114 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 3 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 powerplant at Pyramid Lake.

Wildlife Management. The SWP delivered 270 acre-feet of water to use in managing wildlife in the Pilibos Wildlife Area, located on about 770 acres of land near O'Neill Forebay, 40 miles south of Los Banos.

Operational Flood Release Water. There was no operational flood release water delivered in 1997.

Nonproject Water

In 1997, 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 667 acre-feet of non-SWP water for ACFCWCD-Zone 7 during 1997. The Department conveyed this water in September directly from the Delta to Reach 6 of the South Bay Aqueduct. ACFCWCD-Zone 7 purchased the rights to transfer this water from Byron-Bethany Irrigation District under a separate contract.

Central Valley Project Water. In 1997, the Department conveyed 214,483 acre-feet of CVP water through SWP facilities. Conveyance was made in accordance with agreements negotiated with USBR and contractors receiving water from USBR through the Cross Valley Canal as follows:

Cross Valley Canal Contractors. Under four individual agreements among the Department, LTRID, and PID, two dated June 21, 1996, and two dated July 31, 1997, the Department conveyed a total of 12,738 acre-feet of CVP water for each district to WWD's turnouts in Reaches 4 and 5 of the California Aqueduct.

Musco Olive Products, Incorporated. In accordance with terms of a conveyance agreement with USBR, dated December 26, 1996, the Department conveyed 343 acre-feet of CVP water to Reach 2A of the California Aqueduct for Musco Olive Products, Inc.

Recreational and Wildlife Use. In 1997, the Department conveyed 297 acre-feet of CVP water to the DFG at O'Neill Forebay and WWD's Lateral 4L within Reach 5 of the joint- use facilities of the California Aqueduct.

U.S. Bureau of Reclamation. Under three individual agreements, the Department conveyed a total of 177,062 acre-feet of CVP water for USBR. The agreements were dated July 16, August 11, and October 9, 1997. That amount includes 88,497 acre-feet of makeup water for exports deferred during maintenance at Tracy Pumping Plant; 20,000 acre-feet purchased by USBR from YCWA for fish and wildlife enhancement, associated with implementation of CVPIA; and 68,565 acre-feet to make up deferred exports due to actions taken to improve fish conditions in the Delta.

U.S. Department of Veterans Affairs. Under an annual agreement with USBR, dated December 26, 1996, the Department conveyed 33 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 11,272 acre-feet of CVP water for the USFWS according to provisions of an amended cooperative agreement initiated by the USBR dated September 9, 1994. The water was conveyed to the Kern National Wildlife Refuge through Reach 10A of the California Aqueduct.

Exchange of Nonproject Water. In 1997, a total of 38, 656 acre-feet of nonproject water was exchanged as follows:

Kern County Water Agency. Pursuant to a letter agreement between KCWA and the Department, dated April 2, 1997, WWD exchanged 10,443 acre-feet of its CVP water, stored by USBR in San Luis Reservoir, for an equivalent amount of KCWA's entitlement water. KCWA took delivery of the CVP water during January and February, and WWD took delivery of KCWA's entitlement water during April.

Metropolitan Water District of Southern California. Under a letter agreement between MWD and the Department, dated August 28, 1997, and a separate agreement between MWD and USBR, MWD exchanged 25,900 acre-feet of its entitlement water for a like amount of USBR's CVP water from O'Neill Forebay.

Metropolitan Water District of Southern California/ San Bernardino Valley Municipal Water District. Under an interchange agreement between the two agencies and the Department, dated January 7, 1997, SBVMWD exchanged 2,313 acre-feet of its local water for a like amount of MWD's entitlement water.

Floodwater. Occasionally, during wet years, the Department accepts floodwater from the Kern River into the California Aqueduct through the Kern River-California Aqueduct Intertie—a facility located near Highway 119 in Kern County—for delivery to water agencies under agreements or to help satisfy SWP delivery demands downstream of the Intertie. This operation alleviates flooding of farmlands within the Kern River Interests service and surrounding areas. The Department accepts flood flows through the Intertie under an *Agreement among the State of California, Kern County Water Agency, and the Kern River Interests for Diversions of Floodwaters through the Kern River-California Aqueduct Intertie,* dated November 18, 1975. In 1997, the Department accepted 52,848 acre-feet of floodwater into the California Aqueduct for delivery as follows:

Desert Water Agency/Coachella Valley Water District. Under an agreement among CVWD, DWA, MWD, Delta Lands Reclamation District No. 770, TLBWSD, and the Department, dated April 18, 1997, the Department conveyed 27,130 acre-feet of water from Reach 13B of the California Aqueduct to MWD, at Reach 30, for ultimate delivery to DWA and CVWD. The Department conveyed this water during January and February.

Kern County Water Agency. Under a letter agreement dated June 10, 1997, between KCWA and the Department, the Department conveyed 5,352 acre-feet of water to KCWA at Reaches 12E and 13B. The Department conveyed this water during January and February of 1997.

State Water Project. The Department used the balance—20,366 acre-feet—of the floodwater accepted into the California Aqueduct to help satisfy SWP demands downstream of the Intertie.

Mojave Water Agency. Under two letter agreements dated July 16, 1997, and September 8, 1997, between the Department and MWA, the Department conveyed 1,600 acre-feet of non-SWP water from the Delta to MWA's turnouts in Reaches 22B and 24 of the California Aqueduct. MWA purchased the rights to transfer this water from Natomas Central Mutual Water Company under a separate contract.

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 1997, 1,027,323 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 993,211 acre-feet. Those agencies are: Last Chance Creek Water District (12,590 acre-feet), Thermalito Irrigation District (1,730 acre-feet), Oroville-Wyandotte Irrigation District (7,491 acre-feet), Western Canal Water District (265,425 acre-feet), Joint Water District Board (677,611 acre-feet), Tudor Mutual Water Company (4,500 acre-feet), Oswald Water District (1,258 acre-feet), Garden Highway Water Company (14,324 acre-feet), and Plumas Mutual Water Company (8,282 acre-feet).

South Bay Area. In the South Bay area, 23,142 acre-feet of local water was 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, 487 acre-feet of local runoff from the Houston Creek watershed were stored and delivered to CLAWA under local water rights. These local water rights have been signed over to the Department as part of the contractual arrangements for storing and delivering this local runoff for the CLAWA. Also, under an agreement dated October 24, 1978, among the Department, the County of Los Angeles, Newhall Land and Farming Company, Newhall County Water District, and United Water Conservation District, the Department stored and released 10,483 acre-feet of flood water from Castaic Reservoir during 1997.

Annual Water Entitlements and Water Delivered Since 1962

Information about annual water entitlements and water conveyed for the past 37 years is contained in Table 9-5. The following discussion of entitlements and water conveyed is arranged according to column numbers.

Annual Entitlements. Columns 1 through 7 of Table 9-5 show the amount of the long-term contractor's entitlement water by area for years 1962 through 1997 as specified in the entitlement schedules (Table A, Annual Entitlements) of the long-term water supply contracts.

In some instances these entitlement schedules, projections of each contractor's need for water to 2035, have been amended to meet the needs of individual contractors. The amounts of entitlement water each contractor may request for years 1962 through 2035 may be found in Table B-4, Annual Entitlements to Project Water, in Appendix B.

Water Delivered. Columns 8 through 16 show water delivered or conveyed, including initial fill water and operational losses and storage changes.

Entitlement Water. Column 8 shows amounts of entitlement water delivered each year from 1962 through 1997. In 1997, entitlement water delivered to 26 contractors totaled 2,347,207 acre-feet. That amount includes 21,432 acre-feet of 1997 interruptible entitlement water.

Surplus and Unscheduled Water. Surplus and unscheduled water is water in excess of that required to meet all demands for entitlement water and water to be stored in SWP reservoirs.

Column 9 shows amounts of surplus and unscheduled water delivered from 1962 through 1997. During 1993 through 1997, surplus and unscheduled water were not delivered.

Column 10 includes amounts of water classified as other water delivered in 1997, including nonproject water conveyed through SWP facilities and regulated delivery of local supply.

In 1997, a total of 322,000 acre-feet of other water was delivered.

Feather River Diversions. Column 11 includes amounts of water from the Feather River delivered according to agreements for water rights water. In 1997, a total of 993,211 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 or improve water quality for fish and wildlife. In 1997, a total of 4,146 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, 86 acre-feet, and in 1997, 527 acre-feet were delivered for the initial fill and testing of the Coastal Branch, Phase II.

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. In 1997, that amount totaled 298,435 acre-feet.

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

View of Hyatt Powerplant switchyard

Significant Events

- In 1997, State Water Project pumping and generating plants consumed 5.7 billion kWh and generated 4.6 billion kWh of energy.

- The Department purchased 1.99 billion kWh of energy in 1997 at a cost of $29.16 million. Associated costs for capacity services totaled $23.88 million.

- The Department sold 3.95 billion kWh of energy in 1997 to 30 utilities and 16 power marketers for total revenues of $70.96 million. The Department also received $6.41 million in revenues for capacity, exchanges, and transmission arrangements.

- The electric utility industry in California is scheduled to undergo significant restructuring changes in 1998. Federal and State regulatory orders concerning access to wholesale and retail transmission service and legislation (AB 1890) were signed into California law on September 23, 1996. The law calls for the creation of the California Independent System Operator, which will operate the transmission grid in California, and the California Power Exchange, which will function as a power pool.

- Starting in 1998, restructuring will impact the way the Department conducts its power and transmission transactions. Although the Department can operate under its existing contracts, the Department intends to participate in the ISO and PX as soon as possible. The timing and extent of the Department's participation depend on technical, organizational, and cost issues being debated at the Federal Energy Regulatory Commission by ISO, PX, and other stakeholders. Throughout 1997, the Department actively participated in the "Stakeholder" process that led to the initial tariff filings to FERC by the ISO and PX. The Department also contested with FERC the various parts of those tariffs that would adversely affect the Department.

- In 1997, the Western Systems Coordinating Council, an electric utility organization that includes the Department, began developing the Reliability Management System to address major transmission outages that impacted western states during summer 1996. The resulting program would impose monetary sanctions for violating criteria designed to avoid major transmission disruptions.

- The Department increased its preparations for relicensing the Oroville Facilities with FERC. While the current license does not expire until 2007, the complexity of the relicensing process requires a lengthy preparation period.

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 strategic timing of generation and pumping schedules, purchasing power resources and transmission services, making short-term sales of power surpluses, and conducting 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 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 can allow the Department to operate SWP pumps somewhat independently of water delivery needs. This control of pumping loads and generation allows the Department to enter into advantageous agreements with other electric utilities. Those agreements complement the use of SWP generation to meet SWP power requirements.

Reliability Management System

In July 1996, an electrical disturbance on a local transmission network in a western state quickly escalated to a major outage of the interconnected transmission systems of several states, including California. Several weeks later in August, another disturbance on another transmission network caused a similar major outage for several western states, again including portions of California. In both instances, operation of the SWP was adversely impacted.

The Western Systems Coordinating Council launched an investigation to determine why the initial disturbances had such a calamitous effect. WSCC's preliminary results indicate that voluntary reliability standards for electric utilities may need to be replaced by mandatory measures under a proposed program known as the Reliability Management System. The Department continues to be involved in the WSCC forums where the mandatory measures and their financial impacts are being discussed.

Hydroelectric Facilities Relicensing

The existing 50-year FERC license for the Oroville facilities will expire January 31, 2007. To obtain a new license, the Department must submit a relicensing application to FERC by January 31, 2005. Due to the intense interest in issues examined during the relicensing process, many applicants have found the process to be very complex and litigious. As a result,

relicensing applicants for large projects typically begin preparatory work 8 to 10 years in advance of the existing license expiration. Departmental staff is spending increasing amounts of time researching the FERC relicensing process and identifying interested parties and issues likely to be encountered.

Existing SWP Power Facilities

Figure 10-1 shows the names and locations of the Department's primary power facilities.

Hydroelectric. Economic hydroelectric generation provides the largest share of SWP power resources. The combined 900-megawatt Hyatt Pumping-Generating Plant and Thermalito Pumping-Generating Plant (Hyatt-Thermalito) generate about 2.2 billion kWh in a median water year, while the 3 MW from Thermalito Diversion Dam Powerplant add another 24 million kWh a year.

Generation at SWP aqueduct recovery plants—Gianelli, Alamo, Devil Canyon, Warne, and Mojave Siphon—varies with the amount of water conveyed. These five plants generate about one-sixth of the total energy used by the SWP.

Coal. Since July 1983, the Department has received energy from Reid Gardner Powerplant, a coal-fired facility near Las Vegas, Nevada. Reid Gardner consists of four units. The Department owns 67.8 percent of Unit 4 (186.5 MW based on an upgraded generating capacity of 275 MW), while Nevada Power Company owns the remainder of Unit 4 as well as all of units 1, 2, and 3.

The Department's entitlement share from Unit 4 is 248.6 MW, subject to NPC's limited right to interrupt the Department's energy deliveries during specified periods. Whenever NPC interrupts the Department's scheduled energy, the Department receives 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. When considering or evaluating those resources, the Department reviews SWP power requirements and analyzes the type of resource and its cost. A potential power resource may be evaluated according to the following factors:

- ability to meet anticipated power requirements for pumping;
- transmission access availability;
- anticipated water deliveries to contractors;
- cost of the resource;
- availability and cost of financing;
- environmental impacts and costs of mitigation; and
- operating characteristics.

The Department continued to consider several potential power resources. These included a second unit at Alamo Powerplant, a third unit at Warne Powerplant, and additional capacity at Hyatt-Thermalito.

Contractual Resource Arrangements

Through joint development, exchanges, and purchases, the Department obtains a significant amount of capacity and energy for SWP operations from other utilities throughout California, the Northwest, and the Southwest. Under these agreements, the Department can sell, buy, or exchange energy.

Some agreements allow the Department to sell, buy, and/or exchange short-term firm capacity and/or firm energy on an hourly, daily, weekly, or monthly basis. Those agreements permit more efficient use of the Department's generating resources and more efficient scheduling of energy deliveries.

Negotiations continue with various utilities in the Pacific Northwest to develop arrangements for purchases, sales, and exchanges to take advantage of the Department's 300 MW transmission capacity on the Extra-High Voltage Pacific Northwest Intertie.

To reduce SWP power costs, the Department will continue to use the EHV Intertie and negotiate with utilities and marketers in California, the Northwest, and the Southwest for purchases and sales of power.

Joint Developments. In 1966, the Department entered into a contract with the Los Angeles Department of Water and Power for the joint development of the West Branch of the California Aqueduct. The

Figure 10-1
Names, Locations, and Generation Capability of Primary Power Facilities

LADWP constructed and operates Castaic Powerplant, which is electrically connected to the LADWP transmission system at the Sylmar Substation.

The Department receives capacity and energy at the Sylmar Substation based on weekly water schedules through the West Branch.

Gianelli Pumping-Generating Plant is a joint SWP (222 MW) and U.S. Bureau of Reclamation (202 MW) facility.

Power Exchanges. The largest portion of the energy used by the SWP is provided by the 1979 Power Contract and the 1981 Capacity Exchange Agreement with Southern California Edison Company. Service began in April 1983 under the Power Contract and in April 1987 under the CEA.

According to terms of the Power Contract, the Department provides SCE with up to:

- 350 MW of capacity and approximately 40 percent of the energy from Hyatt-Thermalito;
- 120 MW of capacity and all the energy generated by Devil Canyon Powerplant Units 1 and 2; and
- 15 MW of capacity and all the energy generated by Alamo Powerplant.

In return, the Department receives off-peak energy from SCE equal to the amount of energy provided to SCE from Hyatt-Thermalito, Devil Canyon Powerplant, and Alamo Powerplant, plus an additional amount of energy as payment for the capacity. The amount of additional energy is determined annually based on the Capacity-Energy Exchange Formula defined in the 1979 Power Contract. The formula determines the value of capacity in dollars and converts the dollar amounts into an equivalent amount of off-peak energy.

According to terms of the CEA, each year the Department must provide 412.5 million kWh of energy to SCE during on-peak periods at a maximum delivery rate of 225 MW. SCE returns approximately 110 percent of the energy during mid-peak and off-peak periods. In addition, SCE waives 75 percent of its charges to the Department for specified firm transmission service provided to SWP pumping and generating facilities. SCE also makes an annual payment of $900,000 to the Department.

In addition, according to terms of the 1979 Power Contract, SCE receives energy from four of the Metropolitan Water District of Southern California powerplants—Lake Mathews, Foothill Feeder, San Dimas, and Yorba Linda. In return, the Department receives off-peak energy from SCE averaging 107 percent of the total energy provided to SCE from those plants. All the energy from the fifth plant, Greg Avenue, is provided to LADWP according to a 1983 agreement between LADWP and the Department. The utility returns 98.8 percent of this energy to the Department during off-peak periods.

Purchases. The Department obtains a significant amount of energy through long-term and short-term purchase agreements with utilities in California, the Northwest, and the Southwest.

Long-Term Purchases. The Department purchases hydroelectric energy generated by other utilities. The output of the 190 MW Pine Flat Powerplant, owned and operated by the Kings River Conservation District, supplies the SWP about 400 million kWh of energy in median water years.

The Department contracts for the energy output of five hydroelectric plants owned and operated by MWD. The total capacity of those plants is 30 MW. To use this resource efficiently, the Department included it in the exchange arrangements with SCE.

Beginning in late 1983, the Department purchased wind-generated energy from TERA Power Corporation. The energy was delivered from the Bethany Wind Park to the South Bay Pumping Plant near Tracy. Originally TERA installed 168 wind machines, with a total capacity of 9.45 MW. However, because of mechanical failures and subsequent litigation involving the developer, investors, and manufacturers, many machines have been out of service since 1987. In early 1996, the Department terminated the contract due to a contract breach by TERA Power Corporation. The Department proposes to dismantle and remove the wind park facilities.

The Department signed an agreement with PacifiCorp of Portland, Oregon, to purchase 100 MW of

firm capacity and associated energy. That agreement became effective June 1, 1991, and will continue through 2004.

Short-Term Purchases. The Department contracted with Pacific Gas and Electric Company, SCE, and Bonneville Power Administration (a federal agency created to market energy) to purchase power when needed.

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 other agreements with Western System Power Pool 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, 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 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 EHV 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 to sell 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 for SWP water deliveries.

Sales of Excess Power. When generation from SWP power resources exceeds requirements, the Department sells the excess power on the market. Currently, the Department contracts with utilities and marketers for short-term purchase, sale, or exchange of power. In addition to selling firm power, the Department may sell power on a day-to-day or hour-to-hour basis according to the terms of its interchange agreements

and of the Western System Power Pool agreement. These agreements provide the basis for making economy 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.

SWP Power Operation in 1997

Tables 10-1 through 10-4 present statistical information about SWP power operation for calendar year 1997, including energy consumed and generated, energy exchanged and purchased, and energy sold.

Energy Consumed

In 1997, energy used at the 25 SWP pumping and generating plants totaled 5.7 billion kWh. Table 10-1 shows the amount of energy used each month at SWP pumping and generating plants to operate the SWP.

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-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 1997, 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 1997, Hyatt-Thermalito generated 2.7 billion kWh of energy.

Energy generated at SWP recovery plants—Alamo, Devil Canyon, Gianelli, Mojave Siphon, and Warne—totaled 1.0 billion kWh in 1997.

In 1997, the SWP share of energy generated at the coal-fired Reid Gardner Unit 4 totaled 808 million kWh.

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 1997, LADWP provided 337 million kWh for the Department's share of energy generated at Castaic Powerplant.

In 1997, the Gianelli Pumping-Generating Plant used 237 million kWh and generated 193 million kWh.

Energy Exchanges. The Department has two agreements with SCE to purchase and/or exchange power. (See page 128, Power Exchanges, for a description of the agreements.) Those two exchange agreements resulted in a net of about 2.7 billion kWh to the SWP in 1997.

Purchases and Costs. In 1997, the Department purchased 1.99 billion kWh of energy at a cost of $29.16 million. Associated costs for capacity totaled $23.88 million. Other SWP power costs, including those for debt service at Pine Flat Powerplant and costs at Reid Gardner Unit 4, totaled $44.54 million. Table 10-3 shows amounts of power, transmission, and other services purchased in 1997 and costs of purchases.

Long-Term Purchases. According to terms of the Kings River Conservation District contract, the Department receives the total output of the 165 MW Pine Flat Powerplant. In 1997, the plant provided over 768 million kWh to the SWP at a total cost of $14.91 million.

The Department also has a contract with PacifiCorp, from which the Department purchased 655 million kWh in 1997 at a cost of $34.74 million.

Under the MWD Small Hydro Contract, the Department received 137 million kWh of energy in 1997 from five small hydroelectric powerplants on the MWD system at a cost of $5.6 million.

Table 10-1
Energy Used at Pumping Plants and Powerplants in 1997, by Month
(Millions of Kilowatt-Hours)

Pumping Plants and Powerplants	*Month*												*Total*
	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	
Hyatt-Thermalito Pumping-Generating Plant (pumpback and station service)	0.02	0.02	19.60	47.71	26.57	31.43	6.57	45.11	46.47	20.11	17.82	22.95	284.39
North Bay Interim Pumping Plant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Cordelia Pumping Plant	0.36	0.34	0.30	0.38	0.84	0.87	1.01	0.99	0.70	0.74	0.73	0.68	7.93
Barker Slough Pumping Plant	0.20	0.19	0.21	0.37	0.93	1.02	1.17	1.13	0.66	0.61	0.51	0.40	7.39
South Bay Pumping Plant	2.51	4.21	8.52	7.65	11.17	10.49	14.14	13.82	6.99	5.06	6.63	5.75	96.93
Bottle Rock Powerplant (station service)	0.06	0.05	0.06	0.06	0.03	0.03	0.04	0.04	0.04	0.03	0.01	0.02	0.48
Del Valle Pumping Plant	0.01	0.01	0.01	0.01	0.04	0.17	0.04	0.01	0.01	0.01	0.05	0.01	0.36
Banks Pumping Plant	13.05	8.60	36.49	28.43	22.49	43.64	86.92	71.96	83.76	64.03	83.68	118.88	661.94
Gianelli Pumping-Generating Plant (SWP share)	0.77	-0.11	2.36	0.09	0.13	3.72	0.86	17.62	36.33	31.12	49.85	94.50	237.24
Dos Amigos Pumping Plant (SWP share)	5.68	3.78	17.04	31.37	37.64	36.85	59.22	46.46	20.71	16.38	15.86	16.12	307.10
Buena Vista Pumping Plant	9.90	6.27	21.15	38.99	38.04	29.74	33.05	28.88	25.08	20.14	18.20	16.66	286.10
Teerink Pumping Plant	10.70	5.50	19.31	39.89	37.30	26.04	28.82	26.89	26.22	21.24	19.75	18.30	279.96
Chrisman Pumping Plant	23.83	11.99	42.91	89.53	82.01	55.76	62.57	59.89	59.27	47.69	45.20	42.17	622.83
Edmonston Pumping Plant	84.63	41.88	152.46	320.19	291.71	194.34	219.00	209.21	209.33	171.22	161.39	152.05	2,207.41
Alamo Powerplant (station service)	0.06	0.06	0.03	0.00	0.02	0.04	0.02	0.02	0.02	0.04	0.04	0.04	0.38
Pearblossom Pumping Plant	3.19	0.48	20.16	49.46	48.78	40.46	52.90	47.15	37.90	20.15	13.59	11.51	345.74
Mojave Powerplant (station service)	0.07	0.06	0.05	0.05	0.00	0.00	0.00	0.00	0.01	0.04	0.05	0.06	0.40
Devil Canyon Powerplant (station service)	0.23	0.34	0.29	0.04	0.03	0.03	0.01	0.03	0.09	0.14	0.19	0.29	1.72
Oso Pumping Plant	8.05	5.04	8.06	15.75	12.15	3.18	0.74	2.45	7.19	10.78	13.05	13.40	99.83
Warne Powerplant (station service)	0.07	0.09	0.09	0.06	0.08	0.12	0.14	0.12	0.08	0.04	0.03	0.03	0.95
Las Perillas Pumping Plant	0.04	0.08	0.48	0.86	1.29	1.52	1.64	1.26	0.61	0.60	0.23	0.34	8.95
Badger Hill Pumping Plant	0.03	0.15	1.30	2.41	3.60	4.20	4.54	3.45	1.60	1.62	0.55	0.83	24.27
Devil's Den Pumping Plant	0.05	0.05	0.05	0.07	0.06	0.36	0.19	0.76	1.18	1.58	1.30	1.53	7.18
Bluestone Pumping Plant	0.04	0.04	0.05	0.06	0.06	0.36	0.18	0.74	1.19	1.52	1.23	1.43	6.90
Polonio Pass Pumping Plant	0.04	0.04	0.04	0.05	0.04	0.35	0.17	0.75	1.18	1.60	1.32	1.55	7.12
Subtotal	*163.59*	*89.16*	*351.03*	*673.48*	*615.00*	*484.72*	*573.94*	*578.74*	*566.63*	*436.51*	*451.25*	*519.50*	*5,503.54*
High Voltage Transmission Line Losses	11.55	8.16	6.04	9.76	11.59	16.85	21.46	19.34	16.77	12.26	12.61	19.67	166.07
Total Energy Required for SWP	**175.14**	**97.33**	**357.06**	**683.24**	**626.59**	**501.57**	**595.40**	**598.08**	**583.40**	**448.76**	**463.86**	**539.17**	**5,669.61**

Table 10-2
Energy Generated and Purchased in 1997, 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 Powerplant	456.21	390.66	138.18	114.53	200.59	258.45	402.52	254.24	129.52	162.09	117.75	103.71	2,728.43
Gianelli Pumping-Generating Plant (SWP share)	4.09	(0.07)	3.80	37.80	53.06	28.93	26.14	28.41	6.03	4.77	0.49	0.00	193.44
Alamo Powerplant	0.00	0.00	3.66	9.62	7.85	2.16	8.64	8.49	7.25	4.18	2.61	1.95	56.41
Mojave Siphon Powerplant	0.00	0.00	0.00	1.49	5.51	5.02	6.69	5.05	4.17	1.97	1.24	1.06	32.21
Devil Canyon Powerplant	4.51	0.00	7.31	62.32	85.71	73.56	86.35	79.31	64.11	39.30	19.88	18.44	540.79
Reid Gardner Unit 4 [a]	102.82	76.56	(1.31)	(1.34)	(1.49)	26.97	85.33	87.03	125.55	107.24	101.35	99.45	808.15
Warne Powerplant	17.92	9.62	16.62	32.79	25.43	5.41	1.24	4.24	15.70	23.91	26.63	27.87	207.39
Subtotal	*585.55*	*476.76*	*168.25*	*257.20*	*376.66*	*400.49*	*616.92*	*466.77*	*352.32*	*343.46*	*269.95*	*252.47*	*4,566.80*
Energy Sources from Long-Term Agreements [b]													
Castaic Powerplant	26.06	19.97	28.76	53.47	42.33	10.60	1.43	5.59	23.06	36.57	44.45	45.04	337.32
Metropolitan Water District of Southern California	7.63	6.04	8.11	14.94	15.90	18.35	15.73	13.25	13.00	13.12	10.46	9.61	146.13
Pine Flat Powerplant	82.49	101.94	77.38	55.74	112.23	120.35	114.65	69.09	21.41	1.88	(0.22)	(0.25)	756.68
PacifiCorp (PP&L)	46.80	45.50	50.60	62.53	58.91	49.95	51.16	51.99	68.67	54.86	47.93	65.95	654.83
Power Exchange delivered [c]	(1.20)	0.00	(10.14)	(39.92)	(55.62)	(78.20)	(63.59)	(86.62)	(25.81)	(8.93)	(50.43)	(73.63)	(494.08)
Power Exchange received [c]	0.00	0.00	10.14	39.92	55.74	78.20	61.59	61.66	26.58	18.41	46.50	95.33	494.07
Power Exchange delivered to SCE	(231.24)	(189.97)	(105.47)	(162.04)	(227.78)	(240.01)	(306.40)	(239.67)	(172.75)	(164.72)	(112.64)	(116.35)	(2,269.03)
Power Exchange received from SCE	306.46	241.95	373.05	414.74	425.66	330.80	496.79	597.08	577.01	349.92	445.94	453.92	5,013.31
Generation Replacement Energy delivered to SCE San Bernardino Agreement	(0.25)	(0.22)	(0.23)	(0.21)	(0.25)	(0.22)	(0.09)	0.00	0.00	0.00	0.00	0.00	(1.47)
Emergency Service provided to PG&E	0.00	0.00	0.00	0.00	(0.47)	0.00	0.00	(0.91)	0.00	0.00	0.00	0.00	(1.38)
Power System Deviations Account Transactions	(1.59)	(0.53)	3.48	2.47	6.62	4.17	3.49	1.99	(5.44)	(6.76)	(3.66)	(1.03)	3.20
Purchases [b]													
British Columbia Hydro	0.00	0.00	0.00	0.00	0.00	0.00	1.28	3.84	2.55	9.42	0.00	0.80	17.88
Bonneville Power Administration	0.00	0.00	1.20	19.12	4.46	25.74	22.40	20.08	6.91	3.61	0.00	2.40	105.91
Avista Energy Inc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.15	0.00	0.00	2.15
Portland General Electric Company	0.00	0.00	0.00	7.56	5.58	22.40	1.44	6.84	0.00	0.00	0.20	0.00	44.02
Washington Water Power	0.00	0.00	0.00	0.00	0.00	17.99	0.51	0.00	0.00	0.00	0.00	0.00	18.50
Seattle City Light	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67
Puget Sound Power and Light Company	0.00	0.00	0.80	4.83	6.67	2.32	5.36	0.80	0.00	0.00	0.00	0.00	20.77
Northern California Power Agency	0.00	0.00	0.00	2.30	0.00	0.00	0.38	1.63	0.00	0.00	0.00	0.00	4.31
City of Santa Clara	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
Sacramento Municipal Utility District	0.02	0.00	0.00	0.00	0.00	0.66	0.00	6.40	0.00	0.00	0.00	0.00	7.08
City and County of San Francisco	0.00	0.00	1.30	19.30	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.20
Pacific Gas and Electric Company	0.00	0.00	0.00	0.00	0.11	0.00	0.00	1.40	1.67	28.90	0.00	0.00	32.08
Los Angeles Department of Water and Power	0.00	0.00	0.00	3.60	0.19	0.00	0.96	0.00	0.28	0.00	0.00	0.00	5.03
Southern California Edison Company	0.00	0.00	0.00	0.80	0.00	0.00	0.00	2.10	3.70	0.00	0.00	0.00	6.60
Nevada Power Company	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90
Salt River Project	0.60	0.00	0.00	10.22	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	11.57
Idaho Power Company	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.40
Power marketers	0.00	0.00	0.00	9.07	7.40	1.28	12.35	1.60	5.66	31.50	0.00	0.00	68.86
Subtotal	*236.68*	*224.65*	*438.98*	*518.43*	*461.17*	*364.38*	*419.42*	*518.52*	*547.26*	*369.94*	*428.52*	*481.79*	*5,009.72*
Total Resources	822.23	701.42	607.23	775.63	837.83	764.86	1,036.34	985.29	899.58	713.39	698.48	734.26	9,576.52
Less Energy Sales [a]	(647.09)	(604.09)	(250.17)	(92.38)	(211.24)	(263.29)	(440.94)	(387.21)	(316.17)	(264.63)	(234.62)	(195.09)	(3,906.91)
Total Energy Provided to the SWP	**175.14**	**97.33**	**357.06**	**683.24**	**626.59**	**501.57**	**595.40**	**598.08**	**583.40**	**448.76**	**463.86**	**539.17**	**5,669.61**

[a] The upgrade energy of 43,183 MWh from Reid Gardner #4 is not included.

[b] Amounts show actual energy available for SWP use and include transmission losses.

[c] Power exchanged with APC, Azusa, Banning, BC Hydro, BPA, EPMI, IPC, LDEP, NCPA, NES, PG&E, PGE, SCL, SMUD, SNOH, and Vernon.

Table 10-3
Power, Transmission, and Other Services Purchased in 1997 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	105,911,000	2,032,740.00		2,032,740.00
Portland General Electric Company	Firm and nonfirm energy	44,020,000	734,752.50		734,752.50
PacifiCorp	Firm and nonfirm energy:				10,855,502.63
	capacity and transmission	654,831,000	10,855,502.63	23,882,370.00	23,882,370.00
Puget Sound Power and Light Company	Firm and nonfirm energy	20,773,000	386,282.50		386,282.50
Seattle City Light Company	Nonfirm energy	670,000	4,890.00		4,890.00
Snohomish PUD	Firm and nonfirm energy		1,900.00		1,900.00
BC Hydro, Powerex	Firm and nonfirm energy	178,800,000	319,167.00		319,167.00
Northern California Area					
City and County of San Francisco	Nonfirm energy	23,202,000	311,933.50		311,933.50
Kings River Conservation District	Hydroelectric energy	768,225,504	5,880,547.90		5,880,547.90
Pacific Gas and Electric Company	Firm, nonfirm transmission and capacity	32,075,000	515,745.00		515,745.00
Northern California Power Agency	Firm and nonfirm energy	4,309,000	101,484.00		101,484.00
Southern California Area					
Los Angeles Department of Water and Power	Firm and nonfirm energy	5,029,000	125,965.00		125,965.00
Metropolitan Water District of Southern California	Hydroelectric energy	136,480,070	5,624,343.67		5,624,343.67
Southern California Edison Company	Firm and nonfirm energy and transmission	6,604,000	204,264.00		204,264.00
City of Vernon	Energy		729.60		729.60
Southwest Area					
Nevada Power Company	Firm and nonfirm energy and transmission	900,000	21,000.00		21,000.00
Salt River Project	Nonfirm energy	11,571,000	231,959.50		231,959.50
Power Brokers					
Aquila Power	Firm and nonfirm energy	1,400,000	17,650.00		17,650.00
Avista Corp	Firm and nonfirm energy	18,500,000	119,451.00		119,451.00
Avista Energy	Firm energy	2,154,000	28,948.00		28,948.00
Azusa	Firm energy	120,000	47,174.41		47,174.41
Destec Power	Firm energy	4,608,000	65,664.00		65,664.00
Duke Energy	Firm energy	41,526,000	918,241.94		918,241.94
Enron Power	Firm energy	8,864,000	187,488.00		187,488.00
Idaho	Firm energy	400,000	7,400.00		7,400.00
Peco	Firm energy	1,200,000	26,800.00		26,800.00
Santa Clara	Firm energy	200,000	2,000.00		2,000.00
SMUD	Firm and nonfirm energy	7,080,000	165,720.00		165,720.00
SouthernEner	Firm energy	11,178,000	205,671.00		205,671.00
William	Firm energy	1,288,000	10,176.00		10,176.00
Subtotal		*1,993,400,574*	*29,155,591.15*	*23,882,370.00*	*53,037,961.15*
Transmission and Other Purchases					
Kings River Conservation District	Pine Flat operations and maintenance				3,772,031.00
	Pine Flat debt service				5,355,532.66
Los Angeles Department of Water and Power	Hydro powerplant scheduling				1,150.00
	Castaic line				67,091.93
Nevada Power Company	Reid Gardner Unit 4 firm transmission, operations and maintenance, coal, diesel fuel, insurance and taxes				33,552,139.09
Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company	EHV transmission				1,500,000.00
Pacific Gas and Electric Company	Midway-Wheeler Ridge				132,864.00
	Bottle Rock transmission				27,843.01
	Comprehensive–backbone				8,745,205.95
	Table Mountain–Tesla line credit				(3,185,868.63)
	Pine Flat firm and additions				600,978.87
	EHV exceedance				743,790.50
	Castle Rock–Lakeville Line				94,444.02
	TERA operation and maintenance				3,591.45
Southern California Edison Company	Firm + scheduling + CEA credit				2,195,484.26
	Additional facilities				1,627,291.74
	Interruptible transmission				243,198.98
	EHV exceedance				65,838.16
FERC charges for Oroville, Pine Flat, and southern facilities					367,246.40
Subtotal					*55,909,853.39*
Total		**1,993,400,574**	**29,155,591.15**	**23,882,370.00**	**108,947,814.54**

Table 10-4
Energy Sold in 1997 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	2,348,000	35,340.00		35,340.00
PacifiCorp	332,792,000	6,410,585.00		6,410,585.00
Portland General Electric Company	18,598,000	206,434.00		206,434.00
PowerComAmer	400,000	11,600.00		11,600.00
Puget Sound Power and Light Company	29,713,000	420,568.50		420,568.50
SnohomishPUD (for Exchange Energy)		1,987.50		1,987.50
Northern California Area				
City and County of San Francisco	120,424,000	2,583,401.50		2,583,401.50
City of Redding	12,578,000	198,919.00		198,919.00
City of Santa Clara	11,338,000	117,916.50	17,744.03	135,660.53
Lassen Municipal Utility District	532,000	6,976.00		6,976.00
Modesto Irrigation District	133,517,000	3,703,116.15	2,185,000.00	5,888,116.15
Northern California Power Agency	145,077,000	2,675,098.04	92,457.31	2,767,555.35
Pacific Gas and Electric Company	315,513,000	5,422,938.38	79,170.00	5,502,108.38
Sacramento Municipal Utility District	304,649,000	5,301,878.02	1,200,000.00	6,501,878.02
Turlock Irrigation District	295,000	10,940.00		10,940.00
Western Area Power Administration, Mid-Pacific	20,340,000	357,500.00		357,500.00
Southern California Area				
City of Anaheim	27,309,000	322,089.00		322,089.00
City of Azusa	10,398,000	235,663.88		235,663.88
City of Burbank	5,012,000	98,627.50		98,627.50
City of Colton	23,813,000	431,591.00		431,591.00
City of Glendale	77,154,000	1,669,849.50		1,669,849.50
City of Pasadena	45,543,000	843,539.88		843,539.88
City of Riverside	176,792,000	3,233,248.75	1,093,400.00	4,326,648.75
City of Vernon	180,866,000	3,159,964.90	60,000.00	3,219,964.90
Los Angeles Department of Water and Power	126,057,000	1,041,512.00		1,041,512.00
Metropolitan Water District of Southern California	146,858,000	1,450,251.75		1,450,251.75
San Diego Gas and Electric Company	88,166,000	2,391,604.50		2,391,604.50
Southern California Edison Company	620,141,000	8,435,065.26		8,435,065.26
Southwest Area				
Arizona Power Company	33,802,000	684,818.00		684,818.00
Nevada Power Company	508,192,000	11,611,155.74	1,653,309.91	13,264,465.65
Salt River Project	201,598,000	2,940,366.25		2,940,366.25
Sierra Pacific Power Company				
Power Brokers				
Aquila Power Company	400,000	7,200.00		7,200.00
Avista Corp	8,336,000	74,721.00		74,721.00
Avista Energy	50,000	1,450.00		1,450.00
Citizens Lehman Power Sales	4,610,000	82,905.00		82,905.00
Destec	3,669,000	83,792.25		83,792.25
Duke Energy	52,320,000	1,597,309.86	29,640.00	1,626,949.86
Edison Source	7,040,000	168,960.00		168,960.00
Enron Power Marketing, Inc.	20,441,000	281,241.50		281,241.50
Entergy Pow	39,040,000	443,360.00		443,360.00
LG&E Power	24,000,000	675,200.00		675,200.00
NorAM	16,170,000	320,893.50		320,893.50
SouthernEner	9,868,000	293,604.00		293,604.00
USGEN Power	44,800,000	915,200.00		915,200.00
Grand Total	**3,950,559,000**	**70,960,383.61**	**6,410,721.25**	**77,371,104.86**

Short-Term Purchases. Existing resources and long-term power and transmission contracts ensure that the SWP has enough power to meet long-term needs. Periodically, when SWP power requirements exceed resources during daily operations, short-term purchases meet the difference. In 1997, the SWP purchased short-term energy from 17 utilities and marketers. The short-term energy purchases totaled 370 million kWh (Table 10-2).

Sales of Excess Power

In 1997, the Department sold 3.95 billion kWh of energy to 30 utilities and 16 power marketers for total revenues of $70.96 million. The Department also received $6.41 million in revenues for capacity, exchanges, and transmission arrangements. See Table 10-4 for information about energy and other services sold and revenue received.

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 forecasted. Those variations are due to the amount of water available and delivered in a given year. For example, dry conditions in Northern California could result in a reduction of the amount of water available for delivery. If full deliveries cannot be made, less power will be used than was originally forecast. Power requirements could also decrease during a wet year because of the availability of water in the San Joaquin Valley or Southern California.

Conversely, power requirements could exceed the amount originally forecasted if actual water deliveries are greater than the amounts estimated. For example, if additional pumping is needed to refill reservoirs south of the Delta after an unexpected dry year, more power will be used than was initially forecasted.

Criteria

The Department bases its forecast of electric power primarily on SWP pumping power requirements to deliver water for SWP contractors' short-term and long-term water delivery requests. Requirements are based on the amount of energy necessary to deliver entitlement water requested by water contractors, including losses in reservoirs and aqueducts; recreation water; and water to replace storage in reservoirs south of the Delta.

Short-term power requirements, based on the actual water supply and reservoir storage levels, are determined for the current and two ensuing years of operation. Long-term operational studies for the remaining years are based on median-year water supply conditions and optimal reservoir storage levels.

Information for this chapter was provided by the State Water Project Analysis Office.

Chapter 11
Facilities Maintenance

Construction activity of acquiring
fill material for Oroville Dam
(1964)

Significant Events

- A radial gate at Clifton Court was repaired under a Division of Safety of Dams repair application.
- On April 29, 1997, seismic retrofit of the intake bridge at San Luis Dam was completed.
- In May 1997, the Division of Engineering published a report on their 1996 structural inspection of the radial gates at Oroville Dam spillway and Thermalito Diversion Dam. DOE also published a report on the 1996 inspection of the bypass gate at Thermalito Pumping Plant headworks in June 1997.
- On August 8, 1997, a large leak (1 to 2 cfs) was discovered at milepost 55. Temporary repairs were made immediately, with final repairs pending.
- On August 10, 1997, a slipout occurred at milepost 62, undermining a Tosco Oil pipeline. Emergency repairs were made; final repairs are pending.
- In April 1997, at Pyramid Dam, the 78-inch diameter outlet-works emergency bulkhead was removed for the first time and its bolts replaced, in compliance with Federal Energy Regulatory Commission License 2426.
- In October 1997, the Pyramid Dam Emergency Spillway Remediation Project, begun in June 1996, was completed. Shale bands in the emergency spillway were excavated and filled with reinforced shotcrete to prevent future deterioration of the soft shale.

The Department of Water Resources, through the Division of Operations and Maintenance, monitors all State Water Project facilities to ensure safety and reliability. O&M staff collects and evaluates data about the performance of each facility. Staff also conducts annual, biannual, and quinquennial inspections and makes reports on facilities to document any deficiencies. Those 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, except those in the San Luis Field Division and the Pearblossom Spill Basin.

The Department conducts several types of inspections of SWP facilities. O&M staff collects and evaluates data about the performance of each facility. Engineers from the Division of Safety of Dams review instrumentation data and inspect jurisdictional SWP dams annually to ensure that each dam is satisfactory and safe. The engineers evaluate proposed modifications to existing dams as well as the design and construction of new jurisdictional dams.

The Department is required to contract periodically with independent consultants to review the safety of SWP dams and power facilities except those in the San Luis Field Division and the Pearblossom Spill Basin. The four dams in the San Luis Field Division (San Luis, O'Neill Forebay, Los Banos Detention, and Little Panoche) are joint use with the U.S. Bureau of Reclamation. They are not under the jurisdiction of the Division of Safety of Dams. Pearblossom Spill Basin Dam is in place for use only during misoperation at the Pearblossom Pumping Plant. The spill basin has not been used.

The Federal Energy Regulatory Commission inspects all licensed SWP facilities annually. These inspections include a review of significant events, instrumentation data, and the visual appearance of each dam, penstock, powerplant, etc.

Inspecting and Maintaining Project Dams

During 1997, Department personnel inspected and performed routine and scheduled maintenance on SWP dams. DSOD inspects SWP dams annually with O&M personnel to ensure that each dam is satisfactory and safe. Engineers from DSOD evaluate proposed modifications to existing dams. FERC engineers inspect FERC-licensed SWP facilities annually. Some inspections were conducted under FERC and California Water Code requirements to evaluate SWP dam facilities every 5 years. Other activities were performed by O&M as routine inspections.

Routine Inspections

Routine inspections were conducted by O&M and DSOD staff at Frenchman, Antelope, and Grizzly Valley dams in the Upper Feather River Area; at Oroville, Bidwell Bar, Lime Saddle, Thermalito Diversion, Thermalito Forebay, Thermalito Afterbay, and Feather River Hatchery dams in the Oroville Area; at Clifton Court, Bethany, Patterson, and Del Valle dams in the Delta Field Division; at Sisk, O'Neill, Los Banos Detention, and Little Panoche detention dams in the San Luis Field Division (O&M and USBR); and at Cedar Springs, Pyramid, Castaic, and Perris dams in the Southern Field Division.

A DSOD climbing team completed an inspection of the radial gate at Pyramid Dam and inspected 4 of the 17 radial gates at Thermalito Diversion Dam. Inspections and evaluations are being conducted as a result of the July 17, 1995, failure of gate 3 at the USBR Folsom Dam.

Independent Reviews

California Water Code Reviews. To comply with the California Water Code and the California Code of Regulations, the Department is required to retain a consulting board to review:

- the adequacy of the design of any dam or reservoir the Department proposes to construct; and
- the safety of the completed construction, including the terms and conditions for the Certificate of Approval.

These provisions require the Department to retain a board of three consultants at least once every 5 years to review the operational performance of Department-owned dams. The board of consultants independently reviews and assesses safety conditions of SWP dams. These inspections include a review of significant events, instrumentation data, and the visual appearance of each dam, penstock, powerplant, etc. Consultants are selected based on their geotechnical, structural, and civil engineering knowledge and background as well as their expertise in evaluating the performance of dams.

In preparing their reports, consultants inspect facilities and review surveillance data and other information prepared by departmental staff. The Department then prepares action plans based on the consultants' recommendations.

The first board of consultants convened to review the plans for the construction of Crafton Hills Dam on the East Branch of the SWP.

FERC Reviews. To comply with FERC regulations, consultants review FERC-licensed dams and power generation facilities owned by the Department. Consultants inspect facilities and review surveillance data and other information prepared by Department staff. The Department then prepares action plans based on the consultants' recommendations. These reviews, which may be conducted by one or more consultants, are scheduled every 5 years. None were conducted in this reporting period.

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.

In calendar year 1997, O&M staff provided coordination with DOE on projects reported in Chapter 12 as well as short- and long-term actions at Arroyo Pasajero watershed.

Arroyo Pasajero Program

The Arroyo Pasajero and its tributaries drain approximately 530 square miles of the Coast Mountains west of the California Aqueduct in Fresno County. The Arroyo Pasajero's downstream juncture with the California Aqueduct, also known as the San Luis Canal between San Luis Reservoir and Kettleman City, poses a particularly difficult operational and maintenance problem for the SWP. During periods of heavy rainfall, high flows in the Arroyo Pasajero and its tributaries transport heavy sediment loads eroded from the mountains. Over many eons, sediment transported by Arroyo floods formed a 450-square-mile alluvial fan extending from its apex at the eastern margin of Pleasant Valley (Anticline Ridge) to the San Joaquin Valley trough. The California Aqueduct traverses the Arroyo's alluvial fan and forms a barrier to Arroyo flood flows. Flood control facilities include a retention basin designed to store storm runoff and sediment upstream of the Aqueduct, a siphon to release flood waters east of the Aqueduct, and drain inlets to release floodwater into the Aqueduct. The volumes of runoff and sediment deposition are much greater than estimated during the original design of the retention basin in the mid-1960s.

Interim Programs. USBR designed and constructed the San Luis Canal segment of the California Aqueduct. USBR and the Department share costs of operating and maintaining the facility. Since the floods of 1969, USBR and the Department have worked to minimize the effects of heavy flooding. In 1980, asbestos was discovered in the Metropolitan Water District of Southern California's water supply and traced to runoff from the Arroyo Pasajero and other Diablo range streams. This discovery, in conjunction with the high cost of removing sediment from the Aqueduct, led the Department to adjust operating procedures to minimize runoff entering the Aqueduct.

Long-Term Programs. In 1990, the Department sought the assistance of the U.S. Army Corps of Engineers to identify viable long-term solutions to the Arroyo Pasajero flooding and sediment problems. In 1992, the Corps issued the Arroyo Pasajero Reconnaissance Report, which demonstrated a federal interest in flood control at Arroyo Pasajero. The feasibility study—started in 1994 by a Corps' cost-sharing agreement with the Department and agreed to by USBR—provides a more rigorous analysis of flooding and sedimentation problems and evaluates potential solutions in greater detail. At the end of 1997, the study was scheduled to run through mid-1998 at a projected cost of $5.6 million, although discussions had begun between the Department and the Corps to expand the study scope, with a corresponding cost increase and lengthening of the schedule. The Department, as local sponsor, is committed to 50 percent of the total study cost, with half of this commitment met by providing in-kind services for the study. Under the Department's agreement with the USBR for the Joint-Use Facilities of the San Luis Unit, USBR is paying 45 percent of the Department's study cost.

In April 1997, the Feasibility Milestone No. 3 Conference was held at the Corps' Sacramento District Offices. The conference reviewed existing "without-project" conditions that delineate the expected future flood damages at the Arroyo Pasajero. The investigation indicated that the majority (about 95 percent) of the expected future flood damages were attributable to a failure of the California Aqueduct and the resulting prolonged outage of Aqueduct water deliveries. It was determined that a 43-year return frequency flood would cause a failure of the Aqueduct lining and take as long as 130 days to repair, while the Aqueduct water delivery outage damages to downstream agricultural and municipal/industrial water users were estimated at nearly $1 billion. The Corps concurred that these were eligible flood damages, but recommended investigating additional repair scenarios for the Aqueduct to provide for interim Aqueduct water deliveries during at least part of the repair period.

In June 1997, the Feasibility Milestone No. 4 Conference, held at the Corps' Sacramento District Offices, was attended by Corps managers from both the District and the Corps' South Pacific Division Office in San Francisco. This conference confirmed that a federal interest existed at the Arroyo Pasajero, with at least one proposed alternative demonstrating greater estimated flood control benefits than project costs. The enlarged Westside Retention Basin produced a benefit to cost ratio greater than 1.0, while the Pasajero Gap Detention Dam, at a height of about 70 feet above the stream channel, was just below a benefit to cost ratio of 1.0. Further study on these two alternatives continued, with both included as possible project alternatives in the draft report. A briefing to gain preliminary Corps headquarter's approval of the investigation findings and recommended alternatives is planned for early 1998.

Cantua Creek Stream Group. The Department continued a reconnaissance-level study of flood control measures for Martinez, Domengine, Salt, and Cantua creeks; Arroyo Hondo; Arroyo Ciervo; and Tumey Gulch. The alternatives under evaluation include upstream dams, expanded west-side ponding basins, east-side ponding basins, channel improvements, and conveyance of floodwaters east of the Aqueduct to Fresno Slough. Efforts on the Arroyo Pasajero feasibility investigation delayed completion of the reconnaissance report. Completion of an administrative draft report is anticipated by early 1999.

Repairs and Modifications. Table 11-1 presents information, arranged chronologically, about significant maintenance activities at SWP pumping and power plants in 1997. The table includes information about incidents resulting in outages exceeding 14 days.

Table 11-1
Outages for Maintenance and Repair of Facilities in 1997, by Month

Month	*Facility*	*Description*
January	Devil Canyon Powerplant	Units 3 and 4 out of service from January 9 to January 24 for annual maintenance on west bus and transmission line 2.
	Gianelli Pumping-Generating Plant	Unit 4 out of service from January 9 to May 29 for unit overhaul.
	Devil Canyon Powerplant	Units 1 through 4 out of service from January 20 to February 3 for scheduled tie-in of new intake tower.
	Warne Powerplant	Unit 1 out of service from January 21 to February 11 for maintenance and oil leak repair.
February	Badger Hill Pumping Plant	Unit 2 out of service from February 3 to April 14 for annual maintenance.
	Devil Canyon Powerplant	Units 1 through 4 out of service from February 3 to March 14 for construction work.
	Thermalito Powerplant	Unit 1 out of service from February 3 to April 30 for annual maintenance and stator rewedge.
	Edmonston Pumping Plant	Unit 14 out of service from February 7 to September 4 to rewedge motor.
	Oso Pumping Plant	Units 1, 2, and 4 out of service from February 17 to March 3 to replace 66kV bushings on transformer KYA.
March	Reid Gardner Powerplant	Unit 4 out of service from March 2 to June 16 to repair extensive boiler and adjacent facility damage following an explosion.
	Badger Hill Pumping Plant	Unit 4 out of service from March 7 to March 31 for annual maintenance.
	Banks Pumping Plant	Unit 8 out of service from March 12 to March 27 for excitation repair.
	Hyatt Powerplant	Unit 4 out of service from March 26 to April 24 for annual maintenance.
	Banks Pumping Plant	Unit 1 out of service from March 31 to June 2 for annual maintenance.
April	Badger Hill Pumping Plant	Unit 6 out of service from April 1 to April 17 for annual maintenance.
	Mojave Siphon Powerplant	Unit 1 out of service from April 6 to April 25 to repair a shaft seal leak.
	Mojave Siphon Powerplant	Unit 2 out of service from April 6 to June 20 to repair a shaft seal leak.
	Edmonston Pumping Plant	Unit 1 out of service from April 7 for a pump overhaul.
	Mojave Siphon Powerplant	Unit 3 out of service from April 13 to June 19 to repair a shaft seal leak.
	Teerink Pumping Plant	Unit 7 out of service from April 22 to December 28 for annual maintenance.
	Hyatt Powerplant	Unit 3 out of service from April 30 to May 23 for annual maintenance.
	Thermalito Diversion Dam Powerplant	Out of service from April 30 to May 20 for annual maintenance.
May	Dos Amigos Pumping Plant	Unit 5 out of service from May 4 to July 21 for exciter repair and armature replacement.
	Oso Pumping Plant	Unit 5 out of service from May 4 for stator repair and amortisseur winding replacement. Expected date of completion is October 1, 1998.
	Chrisman Pumping Plant	Units 1, 2, and 3 out of service from June 19 for transformer KYA repair. Expected date of completion is January 30, 1998.
	Alamo Powerplant	Unit 1 out of service from May 27 to June 21 to replace leaking shaft seals.

Table 11-1
Outages for Maintenance and Repair of Facilities in 1997, by Month

Month	*Facility*	*Description*
June	Warne Powerplant	Unit 2 out of service from June 2 to June 30 for annual maintenance of transformer KY2.
	Banks Pumping Plant	Unit 2 out of service from June 9 to July 21 for annual maintenance.
	Chrisman Pumping Plant	Unit 4 out of service from June 16 to July 24 for thrust-bearing repair.
July	Mojave Siphon Powerplant	Unit 3 out of service from July 8 to August 11 to replace a shaft seal.
	Barker Slough Pumping Plant	Unit 2 out of service from July 9 to July 30 to repair a discharge valve.
	Warne Powerplant	Unit 1 out of service from July 18 to August 26 for transformer KY1 foundation work.
	Banks Pumping Plant	Unit 5 out of service from July 21 to August 13 for upstream seal O-ring replacement.
August	Devil Canyon Powerplant	Unit 2 out of service from August 4 to September 2 for annual maintenance.
	Mojave Siphon Powerplant	Unit 3 out of service from August 16 to September 12 for shaft seal repair.
September	Dos Amigos Pumping Plant	Unit 1 out of service from September 2 for hub shaft repair. Expected completion date is June 23, 1998.
	Edmonston Pumping Plant	Unit 2 out of service from September 4 to rewedge motor.
	Banks Pumping Plant	Unit 11 out of service from September 14 to November 26 for discharge valve repair and exciter regulator adjustment.
	Hyatt Powerplant	Unit 2 out of service from September 15 to September 29 for turbine shutoff valve repair.
	Warne Powerplant	Unit 1 out of service from September 15 to October 19 for stator ground fault damage repair.
	Mojave Siphon Powerplant	Unit 2 out of service from September 29 to November 5 for mechanical seal replacement.
October	Pine Flat Powerplant	Unit 3 out of service from October 6 to December 22 for annual maintenance.
	Hyatt Powerplant	Units 4, 5, and 6 out of service from October 11 to December 19 for annual maintenance.
	Gianelli Pumping-Generating Plant	Unit 2 out of service from October 13 to November 25 for biennial maintenance.
	Dos Amigos Pumping Plant	Unit 2 out of service from October 14 to December 12 for biennial maintenance.
	Las Perillas Pumping Plant	Unit 1 out of service from October 22 to December 17 for annual maintenance.
	Pearblossom Pumping Plant	Unit 2 out of service from October 22 to November 21 for annual maintenance.
November	Devil Canyon Powerplant	Unit 4 out of service from November 3 to November 21 for annual maintenance.
	South Bay Pumping Plant	Unit 3 out of service from November 14 to December 1 for trip testing.
	South Bay Pumping Plant	Unit 1 out of service from November 17 to December 3 for current transformer replacement.
	Buena Vista Pumping Plant	Unit 7 out of service from November 24 for impeller replacement and rotor balancing. Expected completion date is December 21, 1998.

Table 11-1
Outages for Maintenance and Repair of Facilities in 1997, by Month

Month	*Facility*	*Description*
December	Las Perillas Pumping Plant	Unit 2 out of service from December 6 for annual maintenance.
	Pearblossom Pumping Plant	Unit 7 out of service from December 11 to December 30 for annual maintenance.
	Hyatt Powerplant	Unit 4 out of service from December 19 for annual maintenance and stator rewedge. Expected completion date is May 7, 1998.
	Pearblossom Pumping Plant	Unit 8 out of service from December 20 for pump lower stationary wearing ring repair. Expected completion date is September 10, 1998.
	Las Perillas Pumping Plant	Unit 3 out of service from December 22 for annual maintenance.
	Pine Flat Powerplant	Unit 2 out of service from December 22 for annual maintenance.
	Thermalito Powerplant	Unit 1 out of service from December 22 for annual maintenance and wicket gate adjustment.

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

Radial gates at check structure
on East Branch of Aqueduct

Significant Events

- More than $1,105,000 in rental income was generated during this year, primarily from agricultural leases on Twitchell and Sherman islands in the Delta.
- Forty-two claims from private property owners were negotiated and paid as a result of the Coastal Branch, Phase II project. More than $530,385 were paid for property improvements resulting from construction activities, additional rental of temporary rights-of-way, and property restoration after completion.
- One hundred sixteen entry permits allowed departmental staff to conduct design and/or environmental studies or conduct temporary construction activities. Most permits were for Delta well decommissioning, off-stream storage studies, and the East Branch Extension project.
- Between October 1, 1996, and December 31, 1997, the Division of Engineering completed 48 design projects. Another 71 construction contracts were in progress or completed.
- On August 20, 1996, San Bernardino Valley Municipal Water District and San Gorgonio Pass Water Agency signed an agreement to participate in the East Branch Extension. The Department will proceed with the final design of the Phase I facilities, with construction scheduled to start in 1999.
- Recoating the Enterprise Bridge was completed in November 1997. This is the first complete recoating since the bridge opened in 1968. The work was funded in part by federal funds.
- Canal repairs at California Aqueduct mileposts 134.98 and 157.40 for damage caused by the heavy rains in the winter of 1994-95 were completed. The repair work, conducted for the most part under water, tested a new technology for installing new concrete canal lining by placing preformed concrete liners in the canal and filling them with concrete slurry.
- The trashrack access bridge at Gianelli Pumping-Generating Plant was retrofitted to increase the stability of the bridge during an earthquake.
- All major facilities of the Coastal Branch, Phase II project were essentially completed by July 1997. The first treated water was delivered August 11, 1997.
- Construction of a blast-paint facility at the Edmonston Pumping Plant was completed.
- Connection of the new intake structure to the San Bernardino Tunnel was completed during the outage and drawdown of Silverwood Lake, which began in November 1996. The new intake has been in operation since March 1997. Testing gate seals and replacing the intake gate operator and hydraulic system are scheduled for 1998.
- More than 3,100 acres were purchased on Sherman Island, bringing departmental ownership to 9,183 acres of the 10,000-acre island.
- Two hundred eighty-one acquisitions of the 290 parcels are completed for the Coastal Branch, Phase II project. Of the remaining nine acquisitions, two are in eminent domain proceedings, three are awaiting restoration of construction impacts, and the remainder involve lengthy processing time by Caltrans, Union Pacific Railroad, and the military department of the federal government.

Construction of the initial facilities of the State Water Project began in 1957 with the relocation of the Western Pacific Railroad yards and Highway 70 near Oroville. In 1963, work began on the California Aqueduct; by 1968, the SWP delivered 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 the initial SWP facilities.

From the early 1970s to the late 1980s, design and construction activities centered on building power plants and adding pumping units and turbine-generators deferred from the initial construction of the SWP, enlarging or extending aqueduct reaches, and providing facilities to ensure water quality in the Delta. In the 1990s, design and construction activities have focused on repairing and replacing components of existing facilities, constructing Phase II of the Coastal Branch to deliver water to San Luis Obispo and Santa Barbara counties, and extending the SWP to the San Gorgonio Pass service area.

Division of Engineering Activities

From October 1996 through December 1997, the Division of Engineering worked on 48 design projects. Table 12-1 lists those projects along with expected or actual completion dates. In addition to designing those projects, staff conducted deficiency studies of dams, canal embankments, and other SWP facilities during calendar year 1997, including Oroville, Feather River Fish Barrier, Thermalito Afterbay, Del Valle, Cedar Springs, Castaic, and Pyramid dams; Peace Valley Pipeline; and Lower Quail Canal. The investigations helped the Department develop contracts to construct remedial seepage control filters at Lower Quail Canal embankment and perform seepage repair to arrest and prevent subsurface erosion along Peace Valley Pipeline. The Department also conducted instrumentation conduit grouting at Oroville Dam.

Seventy-one construction activities were either in progress or completed from October 1996 through December 1997. Projects are listed in Table 12-2. The table also shows project costs, dates contractors received the notice to begin work, and the expected or actual contract acceptance dates. Resolution of contract claims may extend the actual contract close-out beyond the acceptance date. Table 12-2 shows actual costs of completed work or estimated costs of construction in progress.

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

Oroville Division

Thermalito Afterbay Dam. Staff performed an evaluation to establish monitoring and operation criteria to ensure that maximum allowable foundation pore pressures are not exceeded. This evaluation was recommended by the 1989 and 1995 Federal Energy Regulatory Commission Safety Inspection reports. A memorandum report summarized this evaluation in December 1996.

Feather River Fish Hatchery. Work to both expand the fish hatchery and make Americans with Disabilities Act modifications began in April 1996. When complete, the hatchery expansion will include 620 feet of new rearing ponds, a hatchery building, a new ultraviolet system, bird netting, and paving. The ADA modifications at the hatchery and the Oroville Area Control Center include restriping parking stalls,

Table 12-1
Design Activities, October 1,1996, through December 31, 1997, by Division

Construction Division and Facility	*Construction Contract*	*Date Design Began*	*Design Estimated Completion Date*
Sacramento	Jibboom Street site grading	July 1996	March 1997
Sacramento River	Remove steel piles, Woodson Bridge State Recreation Area	July 1997	July 1997
M & T Flood Relief	Emergency repair, Sacramento River	September 1997	September 1997
Oroville Division			
Feather River Fish Hatchery and Powerplant	ADA modifications and fish hatchery expansion	November 1996	December 1997
Hyatt Powerplant	Turbine refurbishment	May 1997	May 1998
Hyatt Powerplant and Thermalito Power-plant	Governor replacement	May 1997	May 1998
O&M Center	Remove and replace storage tanks	April 1996	April 1997
Thermalito Afterbay Dam	Allowable pore pressure study	January 1995	December 1996
Thermalito Powerplant	Furnish automatic voltage regulators	June 1997	July 1998
Enterprise Bridge	Recoat bridge	March 1996	November 1996
Oroville Dam	Spillway repair	September 1997	September 1997
Oroville Wildlife Area	Repair levees	May 1997	June 1997
Delta Division			
Sherman Island	Horseshoe Bend fish screen	November 1996	April 1998
Morrow Island Distribution System	Remove sediment, M-line and C-line ditches	January 1994	July 1997
South Bay Aqueduct	Report: cross drainage flood flows and cross drainage facilities	January 1997	April 1997
North San Joaquin Division			
Temporary Rock Barriers	Construct temporary rock barriers	August 1997	October 1997
Miscellaneous	Replace roof at Romero Overlook, vehicle repair and mobile equipment buildings	April 1997	November 1997
Banks Pumping Plant	Furnish bulkhead gates	January 1997	June 1997
San Luis Division			
Arroyo Pasajero	Report: Arroyo Pasajero 100-year flood, San Luis canal breach	August 1996	September 1997
California Aqueduct	Emergency repair, milepost 51-66	September 1997	January 1998
	Repair canal, mileposts 134.98 and 157.40	November 1996	November 1996
Gianelli Pumping-Generating Plant	Report: transformer oil spill containment	February 1997	June 1997
South San Joaquin Division			
Buena Vista Pumping Plant	Report: transformer oil spill containment	April 1996	November 1996

Table 12-1
Design Activities, October 1,1996, through December 31, 1997, by Division

Construction Division and Facility	*Construction Contract*	*Date Design Began*	*Design Estimated Completion Date*
Chrisman Pumping Plant	Report: transformer oil spill containment	April 1996	November 1996
Teerink Pumping Plant	Report: transformer oil spill containment	April 1996	November 1996
	Furnish stator coils	September 1996	August 1997
Edmonston Pumping Plant	Field installation, remote terminal units	July 1994	December 1996
	Replace 4 pumps	February 1996	June 2002
	Replace 15 kV circuit breakers	March 1996	January 1997
Mojave Division			
Cedar Springs Dam	Sediment mitigation evaluation	January 1994	December 1996
	OP-29 high pore pressure evaluation	January 1995	December 1997
Mojave Siphon Powerplant	Valve vaults	December 1996	November 1997
Angeles Tunnel	Furnish intake gate stems, Angeles Tunnel intake works	May 1995	March 1997
California Aqueduct	Canal Repair, mileposts 333.80, 343.81, and 344.14	January 1996	June 1996
West Branch			
Oso Pumping Branch	Add 20-ton trolley	February 1996	June 1997
Pyramid Dam	Concrete deterioration investigation	July 1995	December 1996
Gorman Creek Bypass Channel	Restore channel and emergency repairs at Peace Valley and Quail Canal	January 1996	May 1997
Miscellaneous	Repair landslide and road, Pastoria Access Road and Quail Lake Operating Road	June 1996	January 1997
Santa Ana Division			
East Branch Extension	Crafton Hills Reservoir	May 1997	May 1998
	Greenspot, Crafton Hills, and Cherry Valley pump stations	May 1997	April 1998
	Furnish pumps, motors for Greenspot, Crafton Hills, and Cherry Valley pump stations	July 1997	April 1998
	Furnish switchgears for Greenspot, Crafton Hills, and Cherry Valley pump stations	September 1997	April 1998
	Furnish transformers for Greenspot, Crafton Hills, and Cherry Valley pump stations	September 1997	April 1998
	Furnish valves for Greenspot, Crafton Hills, and Cherry Valley pump stations	July 1997	February 1998
	Pipeline Reach 1	April 1997	March 1998
	Pipeline Reach 2	June 1997	March 1998
	Pipeline Reach 3	May 1997	May 1998

Table 12-1
Design Activities, October 1,1996, through December 31, 1997, by Division

Construction Division and Facility	*Construction Contract*	*Date Design Began*	*Design Estimated Completion Date*
Multiple Divisions	Seal coat and slurry seal roads and paved areas: Delta, San Luis, and San Joaquin field divisions	March 1996	September 1997

Table 12-2
Construction Activities, October 1, 1996 through December 31, 1997, by Division

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Acceptance Date (Expected or Actual)*	*Contract Costs (Thousands of dollars)*
Oroville Division				
Enterprise Bridge	Recoat bridge (96-31)	February 1997	November 1997	869
Lake Oroville	Construct floating campsites (96-03)	April 1996	February 1997	1,018
North Thermalito Forebay	Construct comfort station and sewer pipeline (96-21)	October 1996	July 1997	475
Feather River Fish Hatchery	Expand hatchery (97-12)	July 1997	July 1997 (Terminated for convenience)	64
Oroville Dam	Spillway repair (97-22)	October 1997	December 1997	352
Oroville Wildlife Area	Repair levees (97-17)	September 1997	December 1997	411
Delta Facilities				
South Delta	Construct fish screens, Horseshoe Bend, Sacramento River (97-14)	August 1997	September 1998	522
Rock Barriers	Construct temporary rock barriers - 1996 and 1997: Middle River, Old River, and Grant Line Canal (96-02)	April 1996	December 1997	2,483
Suisun Marsh Facilities				
Salinity Control Gates	Repair settlement/seepage (96-12)	July 1996	October 1996	185
Morrow Island Distribution System	Remove sediment, M-line and C-Line ditches (97-08)	July 1997	December 1997	351
North San Joaquin Division				
California Aqueduct	Emergency repair, mileposts 54.95, 62.29, and 66.71 (97-20)	August 1997	January 1998	1,361
Delta Operations and Maintenance Center	Construct building addition and modify electrical (95-31)	January 1996	July 1997	539
Banks Pumping Plant	Furnish spare coils (94-24)	November 1994	December 1997	434
	Furnish bulkhead gates (97-16)	October 1997	November 1998	208
Miscellaneous Activities	Slurry seal and seal coat roads (96-07)	July 1996	November 1996	183

Table 12-2
Construction Activities, October 1, 1996 through December 31, 1997, by Division

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Acceptance Date (Expected or Actual)*	*Contract Costs (Thousands of dollars)*
San Luis Division				
Aqueduct	Repair canal, mileposts 134.98 and 157.40 (96-30)	January 1997	April 1997	415
Dos Amigos Pumping Plant	Furnish automatic voltage regulator units—Unit Nos. 1 through 6 (95-04)	June 1995	July 1997	406
	Construct oil spill containment for power transformers (96-11)	August 1996	December 1996	78
	Construct storage buildings (96-27)	January 1997	July 1997	446
Coastal Branch, Phase I				
Las Perillas and Badger Hill Pumping Plants	Furnish replacement switchgear and excitation system—Las Perillas and Badger Hill pumping plants (94-28)	November 1994	April 1999	713
Phase II				
Cuesta Tunnel	Modify Cuesta Tunnel (94-10)	June 1994	November 1996	5,250
Pipeline	Construct pipeline Reach 3 (94-05)	June 1994	August 1997	28,714
	Construct pipeline reaches 5A1 and 5A2 (95-18)	August 1995	September 1998	65,500
Pumping Plants—Devil's Den, Bluestone, and Polonio Pass	Furnish pump units (93-25)	December 1993	June 1999	4,541
	Furnish switchgear—Devil's Den, Bluestone, and Polonio Pass pumping plants (94-03)	July 1994	December 1997	2,145
	Furnish power transformers—Devil's Den, Bluestone, and Polonio Pass pumping plants (94-11)	July 1994	April 1998	983
	Furnish air chambers—Devil's Den, Bluestone, and Polonio Pass pumping plants (94-12)	July 1994	July 1997	3,359
	Complete construction—three pumping plants (94-31)	March 1995	May 1999	17,700
Tank Sites	Construct Tank 1 facilities (93-27)	December 1993	July 1997	24,879
	Construct Tank 2 facilities (95-02)	June 1995	September 1997	8,860
Valves	Furnish ball valves (93-34)	April 1994	May 1999	4,900

Table 12-2
Construction Activities, October 1, 1996 through December 31, 1997, by Division

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Acceptance Date (Expected or Actual)*	*Contract Costs (Thousands of dollars)*
	Furnish butterfly valves and turbine bypass valve—Devil's Den pumping plant to Vandenberg AFB (94-06)	July 1994	June 1999	4,605
Electrical Equipment	Furnish engine generator sets —Las Perillas pumping plant to Lopez Turnout (95-03)	June 1995	March 1998	736
	Furnish power circuit breakers and switchyard equipment —Devil's Den to Casmalia (94-04)	July 1994	October 1996	697
Velocity Flowmeters	Furnish acoustic velocity flowmeters —Devil's Den to Valve Vault Facility (95-05)	June 1995	April 1998	393
Miscellaneous	Seed and control erosion (96-16)	September 1996	October 1998	271
South San Joaquin Division				
Aqueduct	Aqueduct modification, mileposts 206.10 to 207.94 (96-19)	October 1996	April 1997	848
Chrisman Pumping Plant	Furnish stator coils (92-11)	July 1992	January 1998	595
Teerink Pumping Plant	Furnish spare coils and materials (97-02)	August 1997	July 1999	374
Tehachapi Division				
Edmonston Pumping Plant	Construct blast paint facility (95-14)	October 1995	May 1997	1,656
	Furnish pump spare parts, Units 1, 3, 5, 7, 9-14 (96-25)	January 1997	June 1998	2,091
	Furnish 15.8 kV circuit breakers (97-01)	April 1997	October 1998	9,678
	Install remote terminal unit (97-09)	August 1997	October 1998	263
West Branch				
Oso Pumping Plant	20-ton trolley for bridge crane (96-24)	June 1997	August 1998	219
Pyramid Dam	Remediate spillway (95-15)	April 1996	November 1997	2,078
Angeles Tunnel	Furnish intake gate stems, Angeles Tunnel Intake Works (97-07)	October 1997	June 1999	870
Gorman Creek Bypass Channel	Restore channel and emergency repairs at Peace Valley and Quail Canal (97-13)	September 1997	May 1999	7,500
Miscellaneous	Repair landslide and road, Pastoria Access Road and Quail Lake Operating Road (97-05)	May 1997	July 1997	604
Mojave Division				
Aqueduct	Canal repair, mileposts 333.80, 343.81, and 344.14 (96-13)	October 1996	April 1997	2,258
	Modify Aqueduct mileposts 206.10 to 207.94 (96-19)	October 1996	April 1997	848
Mojave Siphon Pipeline	Revegetate (95-23)	October 1995	March 1997	169

Table 12-2
Construction Activities, October 1, 1996 through December 31, 1997, by Division

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Acceptance Date (Expected or Actual)*	*Contract Costs (Thousands of dollars)*
Mojave Siphon Powerplant	Furnish and install turbines, generators, and governors (89-13)	August 1989	May 1998	14,723
	Furnish and install butterfly valves—Mojave Siphon and Devil Canyon Powerplants (91-15)	August 1991	June 1999	6,314
	Furnish and install acoustic velocity flow meters (93-18)	October 1993	July 1998	437
Pearblossom Pumping Plant Enlargement, Phase II	Furnish and install vertical centrifugal pumps (87-04)	May 1987	June 1998	2,680
Silverwood Lake	Construct rock reefs (96-28)	November 1996	January 1997	116
	Install fiber optic cable (97-06)	March 1997	September 1997	85
Santa Ana Division				
Devil Canyon Powerplant	Furnish and install turbines, governors, and valves (87-15)	July 1987	Units rejected	10,265
San Bernardino Tunnel	Reconstruct intake (95-07)	July 1995	Not scheduled	25,531
Sugarloaf Mountain	Provide remedial drainage (96-14)	October 1996	March 1997	223
Multiple Divisions	Furnish steel pipe sections. Delta and Southern field divisions (96-26)	January 1997	June 1998	631
	Seal coat and slurry seal roads and paved areas: Delta, San Luis, and San Joaquin field divisions (97-10)	July 1997	October 1997	660
	Remove and replace storage tanks: Oroville, Delta, and San Luis field divisions (97-11)	August 1997	May 1999	545
Miscellaneous Activities				
Cherokee Canal*	Remove sediment—Phase 1 (96-09)	July 1996	December 1996	867
Jibboom Street Site	Protect building (96-06)	July 1996	November 1996	113
	Grading (97-04)	June 1997	July 1997	165
Magneson Site, Merced River*	Restore river (96-08)	July 1996	October 1996	229
Merced and Tuolumne Rivers*	Repair restoration (96-15)	September 1996	October 1996	65
Sacramento River*	Remove steel piles, Woodson Bridge State Recreation Area (97-18)	July 1997	September 1997	543
M&T Flood Relief Structure*	Emergency Repair, Sacramento River (97-21)	September 1997	December 1997	685

*Non-SWP activities

installing new concrete ramps and curbs at building entrances and viewing areas, installing hardware with modifications for disabled on building doors, restroom modifications, painting, new carpeting, and repairing a water-damaged ceiling at the Area Control Center.

Horseshoe Bend Fish Screen. Contract work to install fish screens on two siphons is expected to begin in August 1997 and should be completed in September 1998. In addition to the two screens for the 15-cfs siphons, work included replacing 200 feet of 24-inch-diameter steel pipe, a screen backwash system, an access platform, four 24-inch-butterfly valves, timber piles to support the pipe and platform, power hookup, and safety buoys and floats.

Other Activities. Staff investigated and reported on an ancient landslide on Bloomer Hill above Lake Oroville. DOE participated in the 5-year safety review board for Antelope, Frenchman, and Grizzly Valley dams. Staff assisted the Department of Fish and Game with their program to eradicate northern pike from Lake Davis.

Construction activities during this reporting period included the following:

Enterprise Bridge. A contract to recoat the Enterprise Bridge spanning the South Fork of the Feather River at Lake Oroville was let in February 1997 and was completed in November 1997. The project included finding an environmentally-safe way to prevent swallows from nesting under the bridge. This operation was monitored by a Department environmental specialist.

Floating Campsites. The contract to construct 10 floating campsites for the Lake Oroville Recreation Area, let in April 1996, was accepted in February 1997.

Comfort Station. A contract to construct a comfort station and sewer pipeline at North Thermalito Forebay was let in October 1996 and completed in July 1997. The work consisted of site preparation, constructing a comfort station building, installing water and sewer lines, and paving access areas.

Oroville Dam. A contract to repair flood-damaged sections of the flood-control, reinforced-concrete, spillway chute was let in October 1997 and completed in November 1997. The work consisted of sawing, removing, and replacing areas of broken spillway concrete, backfilling eroded pervious backfill material behind the vertical spillway walls, sealing cracks, and repairing contraction joints.

Feather River Fish Hatchery. A contract to expand the Feather River Fish Hatchery was awarded in July 1997, but was terminated because the Department was not able to obtain the required FERC approval in time to take advantage of the 1997 construction season. A second contract is expected to be awarded in May 1998.

Delta Facilities

Rock Barriers. The 2-year (1996 and 1997) contract for construction of seasonal temporary rock barriers in designated South Delta waterways (Middle River, Old River, and Grant Line Canal) was completed in December 1997.

As with previous contracts, the contractor was directed to construct and later remove the temporary rock barriers at specified locations within the Delta waterways. Barriers are generally constructed in Old River (two sites), Middle River, and Grant Line Canal, with barrier installation occurring in the spring and removal in the fall. The work includes constructing the rock barriers and installing appurtenant equipment salvaged from the previous year and stockpiled adjacent to the site. Boat ramps to facilitate transfer of boats from one side of the barrier to the other were constructed in previous years at Old River and Grant Line Canal.

Installation and removal of these temporary barriers is designed to enhance water levels and circulation in the South Delta for local agricultural diversion, assist fish migration, and facilitate the gathering of hydraulic data for the design of future permanent barriers.

Fish Screens. Contract work to construct a set of fish screens for an agriculture diversion to Sherman Island at Horseshoe Bend on the Sacramento River began in July 1997; completion is estimated for May 1998. The work consisted of fabricating and install-

ing a set of fish screens, laying 200 feet of 24-inch-diameter intake pipeline, erecting a structural steel access platform on timber piling, and other work.

The screening of river agricultural diversions is required as part of the permit terms for the south Delta temporary rock barriers. A contract to construct several fish-screened agricultural diversions for Sherman Island from the San Joaquin River will be awarded in July 1998.

Suisun Marsh Facilities

Montezuma Slough Control Gates. Bids for a construction contract to repair seepage and alleviate settlement of the Montezuma Slough Salinity Control Gates were opened in June 1996. The contract was completed in October 1996.

Suisun Marsh. Staff developed final plans and specifications for a contract to dredge the Morrow Island Distribution System and replace the existing outlet structure. A contract to remove silt from the Morrow Island M-Line and C-Line ditches was awarded in July 1997. The work also included construction of a circulation ditch, retaining dike, drainage facilities and silt fence. The work was completed in October and accepted by the Deputy Director in December 1997.

Other Activities. DOE staff assisted the Delta Field Division to develop rating curves for the intake pipes at Roaring River. Staff also provided assistance to construct a flashboard riser in Roaring River to help control the water surface, reduce water velocity through the Roaring River fish screens, and allow landowners to fill and drain their properties more easily.

DOE developed preliminary design and cost estimates for a fish screen system at Lower Joice Island.

Geology staff drilled exploration holes at Sherman Island for laboratory testing of peat soil samples.

San Joaquin Division

Delta Operations and Maintenance Center. DOE staff assisted field division forces with the ADA modifications made at the O&M Center facilities. A contract to perform building modifications to the existing Delta Area Control Center, including electrical system modifications, the addition of a concrete-block battery room, and the addition of a concrete-block women's restroom facility to the general warehouse facility to comply with ADA requirements was awarded in January 1996 and completed in July 1997.

Banks Pumping Plant. A contract to furnish spare coils for the Banks Pumping Plant motors was awarded in 1994 and completed in December 1997.

Bulkhead Gates. A contract to furnish four metal bulkhead gates and miscellaneous hardware for use at the Banks Delta Pumping Plant intake was let in October 1997, to be completed September 1998.

Aqueduct Repairs. Three aqueduct repair contracts—two emergency and one urgent—used new repair methods, techniques, and geomembrane materials.

Mileposts 55, 62, and 66. A contract to make emergency repairs to the California Aqueduct was let in mid-August 1997 and completed by August 30. Temporary repairs were made at mileposts 55, 62, and 66.

At milepost 55, leakage had increased to approximately 1,000 gallons per minute, causing great concern to O&M. The emergency repairs consisted of injecting soil/cement grout into the unstable embankment to stabilize it and laying a PVC liner on the canal concrete panels to prevent further damage and displacement.

At milepost 62, a 140-foot section of the canal panel slipped into the canal. The broken concrete panels and debris were removed and the cavity backfilled with large size gravel. Broken concrete panels were not replaced; this will be done at a later date. Pipe supports for an adjacent oil pipeline were repaired by the oil company.

At milepost 66, the wingwalls of check structure 12 were secured from further slippage with anchored tiebacks. The work at these locations was performed in the water, because water deliveries could not be interrupted.

Seal Coating. A contract to apply asphalt slurry seal, seal coat, and fog seal at 10 separate locations in this division was let in July 1996 and completed in November 1996. Locations included North Bay Aqueduct facilities, Banks Pumping Plant, Delta O&M Center, Del Valle Dam, Del Valle Pumping Plant, and Patterson Reservoir.

San Luis Division

DOE assisted field division forces with ADA modifications at the O&M Center and Romero Visitor Center.

Brief descriptions of construction activities completed or currently in progress in the San Luis construction division follow.

Aqueduct. The contract to repair the canal at mileposts 134.98 and 157.40 began in January 1997 and ended in April 1997. Heavy rains in the winter of 1994-95 caused overtopping and damage to the aqueduct. Repair work consisted of removing and replacing buckled and displaced concrete panels, rebuilding eroded canal embankment, and placing preformed concrete liners in the canal and filling them with concrete slurry.

San Luis Operations and Maintenance Center. Construction of a metal warehouse facility was completed in July 1997.

Gianelli Pumping-Generating Plant. A contract to modify and retrofit the trashrack access bridge at Gianelli Pumping-Generating Plant was let in October 1996 and accepted in June 1997. This work was necessary to increase the stability of the bridge during an earthquake.

Dos Amigos Pumping Plant. Furnishing automatic voltage regulators for units 1 through 6 at Dos Amigos Pumping Plant continued; the project was completed in July 1997. This contract was extended to provide additional services of an erecting engineer to install the last three units.

A contract to construct a transformer oil spill containment structure at Dos Amigos Pumping Plant was let in August 1996 and work was completed in December 1996.

A contract to construct a storage building was started in January 1997 and work was completed in July 1997.

The work consisted of constructing access roads, drainage features, reinforced concrete foundation and floor slabs, and providing and erecting engineered prefabricated metal storage buildings at both locations.

Roof Replacement. Work on a contract to replace existing roof systems at the Romero Overlook Visitor Center, the vehicle repair building at the San Joaquin O&M Center, and the mobile equipment building at the Lost Hills O&M Subcenter was started in September 1997 and completed in December 1997.

The work consisted of selective demolition and asbestos abatement of existing roofing, insulation and flashing, removing and reinstalling equipment, constructing built-up roofing, installing sheet metal work and roof drains, applying sealants, and painting.

Coastal Branch

Phase I Construction. Manufacturing and replacing electrical switchgear for Las Perillas and Badger Hills pumping plants continues, with an estimated completion date in April 1999.

Phase II Construction. Construction of Coastal Branch, Phase II, added about 100 miles of pipeline to the existing Phase I facilities. Of the 100 miles, the Department constructed some 72 miles, with the remainder being constructed by Central Coast Water Authority. All major facilities on the project were essentially completed by July 1997, and treated water delivery began in August 1997. The following is a brief recap of the different facilities constructed for this project by the Department.

Pipeline Reaches. Pipeline reaches for the facilities include:

- approximately 360,980 linear feet of pipeline from Devil's Den Pumping Plant to the end of Reach 5A2;

- three pumping plants (Devil's Den, Bluestone, and Polonio Pass) with six 10,000-gallon-per-minute pump units in each plant;
- two tank sites (Tank Site 1 and Tank Site 2) with several water-holding tanks at each site;
- steel air chamber tanks at the three pumping plants; and
- appurtenant mechanical and electrical equipment.

Tank 1-Polonio Pass. All major construction work for the Tank 1-Polonio Pass complex was completed by June 30, 1996. The contract was accepted July 2, 1997.

Pumping Plants. Work on the three pumping plants' initial contract (Devil's Den, Bluestone, and Polonio Pass) was completed by June 30, 1996, with minor punch list item work to be completed. The contract was accepted November 14, 1996.

Work on the three pumping plants under the completion contract continued during this report period. Pump installation was essentially completed by July 1997 and the first treated water delivered August 11, 1997. Operational testing and warranty remedial work will continue into 1998.

Cuesta Tunnel. Modification work for Cuesta Tunnel was completed in August 1996.

Tank Site 1. Construction of the tanks and additional facilities was completed in July 1997.

Tank Site 2. Work on construction of the tanks at Calf Canyon was completed in September 1997.

Air Chambers. Erection of the air chambers at Devil's Den, Bluestone, and Polonio Pass pumping plants was completed in July 1997.

Equipment. The manufacture of bridge cranes, pumps, motors, transformers, fiber optic cable, switchgear, switchboards, valves, acoustic flow meters, and other equipment was completed and delivered to the job sites. Installation of the equipment is essentially completed.

Work on a contract to provide seeding and control erosion began in September 1996 and is expected to be completed in October 1998.

South San Joaquin Division

Studies for transformer oil leak containment at Buena Vista and Teerink pumping plants were completed in July 1996; Chrisman Pumping Plant was completed in November 1996.

DOE continued to assist the field division forces with the ADA modifications made at the O&M Center.

Construction work completed or in progress in this division includes:

Aqueduct. Contract work for aqueduct modification started in October 1996 and was completed in April 1997. The work consisted of canal excavation, embankment construction, canal concrete lining, and operating-road reconstruction.

Chrisman Pumping Plant. Stator coils manufacturing began under a contract awarded in July 1992. Work was completed in December 1997.

Teerink Pumping Plant. A contract to furnish spare coils and materials was awarded in August 1997, with completion expected in July 1999.

Tehachapi Division

DOE staff assisted field division forces with the ADA modifications required at Edmonston Pumping Plant.

Construction work completed or in progress is as follows.

Edmonston Pumping Plant. Construction of a blast-paint facility, begun in October 1995, was completed in May 1997.

A contract to furnish spare parts for pump units 1, 3, 5, 7, and 9 through 14 was let in January 1997, with completion expected in June 1998.

Contract work to furnish 15.8 kV electrical circuit breakers for this facility began in April 1997, with completion expected in August 1998.

A contract to remove existing control systems and install new remote terminal units was awarded in August 1997, with an expected completion in October 1998.

West Branch

An evaluation of the concrete deterioration in the outlet works was performed at Pyramid Dam, as recommended by the 1995 Federal Energy Regulatory Commission and Director's Safety Review boards. Preliminary review indicated that the deterioration is primarily the result of salt crystallization, which does not impact the safety of the structure. A memorandum report summarizing the results of the testing program was published in December 1996.

Gorman Creek. Design of a bypass channel around Warne Powerplant was completed in summer 1997. Construction began in September 1997, with completion expected in May 1999.

Design work also continued on measures to protect State facilities from large flows in Gorman Creek.

Castaic Dam. Division staff assisted field division forces with the ADA modifications required at Vista del Lago Visitor Center. Other Design Branch studies included:

- study of alternative conveyances to bypass the Peace Valley Pipeline and/or Warne Powerplant;
- installation of a subsurface drain seal to eliminate ongoing subsurface erosion along the Peace Valley Pipeline; and
- cursory study of alternatives to remove silt deposited in the tailrace channel below the Warne Powerplant was completed.

Construction activities on the West Branch included the following:

Pyramid Dam. Work on a contract to perform remedial work on the Pyramid Dam spillway began in April 1996 and was completed in November 1997. The work removed badly eroded material from two shale rock strata from the 1,200-foot-long, unlined rock spillway channel; drilling, installing, and grouting steel anchors; and welding wire fabric.

Oso Pumping Plant. A contract was awarded in June 1997 to engineer, fabricate, furnish, install, and test a 20-ton pendant and infrared radio-remote-controlled electric-driven trolley to be retrofitted on an existing overhead traveling 60-ton bridge crane at this facility. Completion is planned for August 1998. The contract also includes furnishing special tools and spare parts.

Angeles Tunnel. A contract to fabricate 14 intake-gate stems and appurtenances for the Angeles Tunnel Intake Works was awarded in October 1997, with completion expected in June 1999. The work also included application of protective coatings and cathodic protection for the stems.

Road Repairs. In May 1997, contract work began for landslide removal and road repair at Pastoria Access Road and repair of Quail Lake Operating Road. The work is expected to be completed in July 1997. The work consists of removing landslide material, grading slopes, placing geobrick, seeding slopes, reconstructing roads, and constructing drainage facilities.

Mojave Division

Design was completed to repair three areas of the California Aqueduct, at mileposts 333.8, 343.81, and 344.14, where severe cracking occurred.

Staff completed the Summary Geology Report for Cedar Springs Dam and transmitted it to FERC.

The following paragraphs describe construction activities in the Mojave Division.

Aqueduct. Contract work to repair damaged canal sections at mileposts 333.80, 343.81, and 344.14 began in October 1996 and was completed in April 1997. These repairs were necessary because of damage caused by landslide seepage. The work consisted of removing damaged concrete canal lining panels, application of a 3-step waterproofing membrane, and the application of a 2-inch-thick shotcrete lining.

A contract to modify and repair damaged canals sections from milepost 206.10 to milepost 207.94 was let in October 1996 and completed in April 1997. The work was similar to that described above.

Mojave Siphon Second Pipeline. A contract to revegetate the ground above the buried pipeline was awarded in September 1995 and completed in January 1996. A 1-year plant establishment period extended the contract completion date to March 1997.

Mojave Siphon Powerplant. Installation and operational testing of the three new turbines and generators along with associated equipment is essentially complete. The three units were ready for commercial operation in July 1996; however, final performance testing and the reliability testing of the acoustic velocity flowmeters cannot be accomplished until reliable water deliveries are available for these specific purposes.

Valves. A contract to furnish and install butterfly valves for the Mojave Siphon and Devil Canyon powerplants was awarded in July 1991. The original valves ordered under this contract were delivered and installed by February 1996. Two additional 120-inch valves for use as turbine-shutoff valves were ordered. Installation will be delayed until valve vault construction is complete. Contract completion is expected by June 1999.

Silverwood Lake. A contract to construct rock reefs in the lake and provide artificial fish habitat was let in November 1996 and completed in January 1997. This work was required to mitigate fish habitat that may have been impacted by the lowering of Silverwood Lake to accommodate construction of the new San Bernardino Tunnel Intake.

Contract work to install a Department-furnished fiber-optic control cable between Cedar Springs Dam control building and Mojave Siphon slide gate control building began in March 1997 and was completed in September 1997.

Pearblossom Pumping Plant. Work continued on fabricating seals in an attempt to solve the leaking of the new pump units installed during enlargement of the plant. The pump contract cannot be accepted until this problem is resolved. Contract acceptance is not expected until June 1998.

Santa Ana Division

San Bernardino Tunnel Intake. July 1995, construction began on the new San Bernardino Tunnel intake to comply with current seismic code requirements.

All major excavation and tunneling work was completed by June 1996. Some 91,000 cubic yards of earth, 465 linear feet of a 31-foot-diameter tunnel, and 16 linear feet of a 29-foot-diameter access shaft were excavated for this project. Reinforced concrete construction required 10,600 cubic yards of concrete. With some exceptions, mechanical work, including an intake gate, a bulkhead gate, trashracks, lifting cranes, and associated electrical work, was completed by June 30, 1997. Testing the gate seals was completed in December 1997. Replacement of the intake gate operator has not been scheduled.

The new intake structure began water deliveries in March 1997. This event allowed the SWP to begin filling Silverwood Lake and enabled the Department to make contract water deliveries through the San Bernardino Tunnel.

Devil Canyon Powerplant. As reported in Bulletin 132-97, all contract work for this facility, with the exception of the turbine, has been completed and accepted. The turbine contractor continues to work on a remedial solution for the turbine low-horsepower output at maximum flow. The contract will not be accepted until this problem has been solved.

East Branch Extension. Final design began in early 1997 on facilities to extend the East Branch of the California Aqueduct to Cherry Valley. The facilities will deliver SWP water from the Devil Canyon Powerplant afterbay to the eastern portion of the San Bernardino Valley Municipal Water District service area and to the San Gorgonio Pass Water Agency. The first of 10 construction contracts will be advertised in 1998. A supplemental environmental impact report was distributed in fall 1997. The project (13.5 miles of large-diameter pipeline, three pumping stations, and a dam and reservoir) is scheduled for completion in June 2001.

Other Activities. Other construction work included a contract for Santa Ana Pipeline excavation, inspec-

tion, and repair. The work began in September 1995 and was completed in August 1996. The remedial drainage area on the south side of Sugarloaf Mountain was repaired by placing a series of cross ditches to convey the water to a shotcrete-lined ditch. This work was completed in March 1997.

Staff drilled, sampled, and tested 24 exploration holes as part of a foundation study for Perris Dam.

Multiple Divisions

Radial Gate Inspection and Structural Evaluation. The structural evaluation and inspection of SWP dam radial gates was initiated in response to a directive from the Division of Safety of Dams as a result of the failure of Spillgate No. 3 at Folsom Dam on July 17, 1995. Division staff inspected and reanalyzed 37 radial gates on the Department's facilities. All inspections have been completed. The inspections were completed by climbing teams trained by Caltrans personnel and a private consultant. A final report summarizing the inspection and structural evaluations of the gates was completed by June 1997.

Steel Pipe Sections. A contract to fabricate steel pipe sections for Delta and Southern field divisions was let in January 1997, with completion expected in June 1998. These pipe sections will be used to make repairs in emergency situations.

15.8LV Circuit Breakers. A contract to furnish circuit breakers for Edmonston Pumping Plant, Devil Canyon Powerplant, and Gianelli Pumping-Generating Plant was awarded in April 1997, with completion expected in December 1999.

Seal Coat Road. Work on a contract to seal coat and slurry seal roads and paved areas in the Delta, San Luis, and San Joaquin field divisions began in July 1997 and completed in October 1997.

Storage Tanks. A contract to remove underground storage tanks and replace them with surface tanks in the Oroville, Delta, and San Luis field divisions was awarded in August 1997, with completion expected in May 1999.

Miscellaneous

Miscellaneous construction activities are listed below.

Cherokee Canal. A contract for sediment removal was let in July 1996 and completed in December 1996.

Jibboom Street Site. A contract to board up windows and entrances to provide security to the building was let in July 1996 and work was completed in November 1996. A contract to grade and remove contaminated soil, place cap clay material, and seed designated areas at the work site was awarded in June 1997 and completed in July 1997.

Magneson Site, Merced River. River restoration work began in July 1996 and was completed in October 1996.

Merced and Tuolumne Rivers. Repair and restoration work on the two rivers began in September 1996 and was completed in October 1996.

Sacramento River. A contract to remove steel piles at Woodson Bridge State Recreation Area was awarded in July 1997 and work was completed in September 1997.

Emergency Repair. Work on a contract to perform emergency repairs to the M&T flood relief structure on the east bank of the Sacramento River, approximately 10 miles west of the City of Chico, was started in September 1997 and completed in December 1997. The work consisted of backfilling various eroded levee sections, constructing protective rock riprap aprons at several measuring weirs, shaping levee slopes, and placing geotextile fabric and stone slope protection.

Right of Way Activities

The Department spent a net total of $244.7 million to acquire rights of way and mitigation lands for the SWP from inception to December 30, 1997. In calendar year 1997, the Department:

- managed 88 leases for a total revenue of $1,105,868;

- sold two parcels of excess land—North Bay Aqueduct, 0.32 acre for $45,000, and Coastal Branch Phase II (Shandon Field Office), 0.32 acres for $45,000;
- obtained 116 temporary entry permits for various purposes;
- issued 17 encroachment permits and collected fees of $30,550 to cover staff costs;
- completed six encroachment reviews where the applicant has prior property rights; and
- coordinated review of 21 tentative tract map developments within 1 mile of the Aqueduct.

Coastal Branch, Phase II

To date, the Department has secured all rights required for construction. In calendar year 1997, the Department obtained property rights (40.50 acres over 6 parcels) for pipeline, temporary construction, electrical transmission lines, and access roads at a cost of $161,771.

In addition to departmental actions, the California Water Commission approved Resolutions of Necessity for two parcels, enabling the Department to continue with eminent domain proceedings.

West Delta Program–Sherman Island

The Department purchased two parcels (3,123 acres) for a total cost of $6,550,278. The Department now owns more than 92 percent of the 10,000-acre island and continues to negotiate with any willing sellers to purchase remaining parcels.

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

Chapter 13
Recreation

Steamboat Slough in the
Sacramento Delta (1969)

Significant Events

- Construction of 10 floating campsites at Lake Oroville was completed. The campsites were moored at various locations on the lake. Each is a 2-story structure measuring 20 feet by 24 feet and equipped with a flush toilet, storage locker, picnic table, bench, and gas barbecue. These facilities were in place and ready for the 1997 recreation season.

- The new North Forebay Aquatic Center at Lake Oroville was dedicated May 9, 1997. In addition to the main building, facilities provided include a fenced compound, shade ramada, picnic tables, and barbecues. This facility was developed by the Department in conjunction with the Butte Sailing Club and California State University, Chico. Among those attending were Congressman Wally Herger, representatives from Assemblyman Bernie Richter's and Senator Tim Leslie's offices, local dignitaries, and members of the Department's Oroville Field Division.

- On July 26 and 27, 1997, a grand reopening and 25th anniversary celebration was held at Silverwood Lake. Since 1995, due to construction of a new outlet tower, the lake level had to be lowered to a depth of 90 feet. During a 6-month period the lake was closed to all boats. Upon completion, the lake level was returned to almost full capacity and reopened to boating. Among the activities commemorating the event were free boat tours, guided nature hikes, a children's fishing clinic, and a fishing tournament.

The State Water Project is a multipurpose project that benefits millions of Californians. In addition to providing water supply, flood control, and habitat for fish and wildlife, the SWP offers extensive and varied recreational opportunities—tours, sightseeing, fishing, hunting, camping, boating, water skiing, bicycling, and swimming.[1]

Recreation Areas

The State Water Project has 37 developed recreation areas or sites throughout California, including 17 fishing access sites. Figure 13-1 shows the names and locations of each area.

Recreation Days

In 1997, SWP facilities received 4.53 million recreation days of use, a slight decrease from the 4.73 million recreation days recorded in 1996 (Table 13-1). Recreational use at the 17 developed fishing access sites and along the California Aqueduct Bikeway was down more than 25 percent from 1996.

Most SWP recreation and visitor use was concentrated at the major reservoirs, where well-developed facilities accommodate the public. Fifty-three percent of the total SWP recreational use in 1997 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 145 million recreation days have been recorded at SWP recreational facilities.

During 1997, the following planning activities for recreation facilities occurred:

- The Department of Boating and Waterways completed conceptual plans for boat launching facility improvements at these locations: Lake Oroville spillway boat launching area, Medeiros area at San Luis Reservoir State Recreation area, and Castaic Lake-Castaic Dam left abutment boat launching area.
- Contract plans and specifications, prepared by the Department of Boating and Waterways, were completed for general renovation of boat launching facilities at Lake Del Valle. Construction is expected to begin in fall 1998, with completion expected by summer 1999.

New Facilities

Lake Oroville. The following new facilities were completed at Lake Oroville recreation areas.

- Construction of the North Thermalito Forebay Aquatic Center was completed and dedicated in May. Facilities include the building, fenced compound, shade ramada, picnic tables, and barbecues. The Department developed these facilities in conjunction with Butte Sailing Club and California State University, Chico;
- A 6-unit restroom facility was added adjacent to the main picnic area at the North Thermalito Forebay; and
- A fish-cleaning station was added at the Monument Hill area overlooking Thermalito Afterbay.

[1] According to the Davis-Dolwig Act (Water Code Sections 11925, *et seq.*), the Department has overall responsibility to acquire property, plan recreation, and ensure that enhancement of fish and wildlife habitat is included as part of the State Water Project, although the costs of these recreation activities are not borne by the water supply contractors. In addition, Federal Energy Regulatory Commission License Numbers 2100 and 2426 require the Department to plan for recreational and associated activities at licensed SWP facilities.

Figure 13-1
Names and Locations of SWP Recreational 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. Walk-in Fishing Access Site (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. Walk-in Fishing Access Site (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 1997, by Field Division and Facility

Field Division	*Number of Recreation Days*
Oroville Field Division	
Frenchman Lake	230,000
Antelope Lake	65,000
Lake Davis	175,000
Lake Oroville and Thermalito Forebay	500,300
Thermalito Afterbay and Oroville Wildlife Area	273,000
Total	**1,243,300**
Delta Field Division	
Lake Del Valle	332,200
Bethany Reservoir	11,400
Fishing Access Sites:	
Neils Hansen	100
California Aqueduct:	
Walk-In Fishing	2,600
Bikeway	200
White Slough Wildlife Area	12,500
Total	**359,000**
San Luis Field Division	
San Luis Reservoir, includes O'Neill Forebay and Los Banos Reservoir	476,000
California Aqueduct:	
Walk-In Fishing	14,000
Wildlife Areas	9,000
Total	**499,000**
San Joaquin Field Division	
Fishing Access Sites:	
Kettleman City	1,200
Lost Hills	1,100
Buttonwillow	1,200
California Aqueduct:	
Walk-In Fishing	6,400
Total	**9,900**
Southern Field Division	
Silverwood Lake	315,400
Lake Perris	1,101,000
Pyramid Lake	315,000
Castaic Lake	684,000
Fishing Access Sites:	
Quail Lake	1,800
77th Street East	300
Longview Road	100
California Aqueduct:	
Walk-In Fishing	3,100
Bikeway	700
Total	**2,421,400**
Grand Total	**4,532,600**

Lake Del Valle. The following new facilities were completed at Lake Del Valle recreation areas:

- PG&E installed four street lights at Arroyo del Valle area.
- East Bay Regional Park District installed an automated ticket machine at Arroyo del Valle staging area to collect fees for parking, fishing, dogs, and trails.
- East Bay Regional Park District also installed an iron ranger near the entrance to receive fees for daily fishing permits.

Improvements to Facilities

The following improvements were made at SWP recreation areas during 1997 to help meet recreational demands.

Lake Del Valle.

- Fifteen asphalt dumpster pads with wheel stops were installed.
- The 300 feet of hypalon berm around sewage ponds and a graveled road were extended.
- Six hundred feet of sewer line and sealed manholes were replaced.
- Picnic tables in reservable sites were painted and gravel placed under them.
- Fifty-three trees were planted.

Pyramid Lake. The existing dock was replaced by a new administrative dock with utilities—dock lights, sewage line, and water and electric service. The dock will accommodate six patrol boats and a service barge. This renovation was funded by the Department of Boating and Waterways.

Castaic Lake. The Department of Boating and Waterways also funded construction of shoreline erosion control and general improvements at the west boat launch ramp adjacent to the Castaic Dam right abutment.

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. The new plan replaced the original *Oroville Reservoir, Thermalito Forebay, and Afterbay Recreation Report* (Bulletin 117-6), which was prepared in December 1966. The new plan, in FERC Order 2100-054, submitted June 1, 1993, and

approved September 22, 1994, includes additional recreation facilities and addresses concerns raised by local residents regarding recreation and fishery-related issues.

Recreation plan implementation began in 1995 with establishment of the Lake Oroville Recreation Advisory Committee. This committee of local government, citizens' groups, and State agencies was formed to advise the Department on recreation plan implementation. The following elements are being developed or are already completed:

- Ten floating campsites were constructed and moored at various locations on the lake.
- An en-route RV camping area was added at the North Forebay Area.
- Construction began on a duck brood pond and restroom and picnic facilities at Thermalito Afterbay.
- Buoys were deployed around water-ski slalom course.
- Construction was completed on the 41-mile bike trail main loop.
- Construction of the Lime Saddle Boat Ramp improvements (Department of Boating and Waterways), equestrian campground at Loafer Creek Recreation area, and lighting on Oroville Dam was completed; and
- At Lake Oroville, fishery and fishing improvements included developing a fish management and stocking plan, stocking chinook salmon, and deploying fish shelters.

Most recreation and fish facilities should be completed by 1998; certain elements of the plan may require time extensions to complete.

Fish Plantings

In 1997, the Department of Fish and Game continued its fish-planting activities at 10 SWP facilities. Total plantings of trout and chinook salmon decreased by nearly 2.5 percent in 1997 (Table 13-2).

At the Feather River Fish Hatchery and the Thermalito Afterbay rearing ponds, 13,669,600 fish were produced in 1997, down 9 percent from 1996. That figure includes 12,900,000 chinook salmon and 769,600 steelhead trout. Of the chinook salmon reared, 633,000 were fingerlings, 11,990,400 were advanced fingerlings, 175,500 were subcatchables, and 101,100 were catchables. Of the steelhead reared, all 769,600 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 have been 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.

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 1997
(Thousands)

Location and Size	*Eagle Lake Trout*	*Brook Trout*	*Rainbow Trout*	*Brown Trout*	*Chinook Salmon*	*Total*
Antelope Reservoir						
Subcatchable	57.2					57.2
Catchable		8.6	8.2			16.8
Lake Davis						
Catchable	14.2					14.2
Frenchman Reservoir						
Fingerlings			145.3			145.3
Lake Oroville						
Subcatchable				67.4	165.2	232.6
Catchable					84.8	84.8
Fingerling					105.0	105.0
Thermalito Forebay						
Catchable		10.7	29.8			40.5
Lake Del Valle						
Catchable	4.0		34.0			38.0
Los Banos Reservoir						
Catchable			12.6			12.6
Pyramid Lake			No Fish Planted			
Castaic Lake						
Catchable			21.0			21.0
Castaic Lake Lagoon						
Catchable			51.4			51.4
Silverwood Lake			No Fish Planted			
Lake Perris						
Catchable			64.6			64.6
Lake Skinner [a]						
Catchable			No Fish Planted			
California Aqueduct			No Fish Planted			
Total	**75.4**	**19.3**	**366.9**	**67.4**	**355.0**	**884.0**

[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

Photograph courtesy of David G. Hicks

The American Adding Machine was introduced in 1913. To add, the user touched a digit and then raised the chrome lever with the thumb.

Significant Events

- On March 10, 1997, the Department sold $20.7 million of Water System Revenue Bonds, Series R. The proceeds were used to refinance $18.0 million of previously issued bonds and pay for bond financing costs.

- On July 30, 1997, the Department sold $200.2 million of Water System Revenue Bonds, Series S. The proceeds provided long-term financing of construction expenditures, paid bond financing costs, and refinanced $99.2 million of previously issued bonds.

- On July 30, 1997, the Department sold $135.7 million of Water System Revenue Bonds, Series T. The proceeds refinanced bonds previously issued for the Reid Gardner Project and paid bond financing costs.

This chapter presents both a summary and a detailed explanation of State Water Project current financial analysis, capital costs and requirements, revenues and expenses, and bond activities for years 1998 through 2010.

The Department performs a financial analysis annually to ensure that the SWP financing program will have sufficient funds to meet construction obligations; project operation, maintenance, power, and replacement costs; bond debt service payments; and repayment of California Water Fund monies expended for construction. The results of the current financial analysis, dated December 31, 1997, are presented in Tables 14-1 and 14-2 on pages 181 and 182.

Future conditions may change the financial analysis. These contingencies include:

- alterations in schedules of currently planned construction for future facilities;
- changes in economic conditions, including changes in interest rates and in SWP contractor entitlements due to changes in amounts of water needed, conserved, or reclaimed;
- completion of Delta transfer facilities;
- development of additional sources of water not foreseen at this time;
- deviations from the assumptions regarding actual rates of price escalations for future construction from those currently assumed for cost estimates;
- enlargement of the San Luis Canal;
- increases in capital costs related to additional conservation facilities; and
- outcomes of lawsuits now pending before the courts.

Capital Requirements and Financing

In conducting the current analysis, the Department projected that future construction and Davis-Grunsky Act Program costs through the year 2010 will total $449 million. Special capital requirements for revenue bond financing of these construction costs are projected at $53 million for a total capital requirement of $502 million. This projection includes construction and financing costs for the following significant SWP facilities planned for completion by 2010:

- Interim South Delta facilities;
- Gorman Creek Channel modifications on the West Branch of the California Aqueduct; and
- Extension of the East Branch of the California Aqueduct.

Most of these capital requirements will be financed from the projected sale of $411 million of revenue bonds. The remaining $91 million will be financed from current bond proceeds, capital resources revenues, and the transfer of excess revenues not needed for operation costs, debt service, or repayment of the California Water Fund.

The analysis of capital requirements and financing presented in Table 14-1 does not include the costs and financing of all facilities needed to develop the remaining yield necessary to meet the total 4.2 million acre-feet contractual commitment to long-term SWP water contractors. Also, Table 14-1 does not include costs of associated works that are essential for realizing full benefits from the SWP but are financed and constructed by local interests or State agencies other than the Department. Those facilities include on-shore recreational developments at SWP facilities and local distribution facilities.

The allocation of capital expenditures among various SWP purposes is detailed in Table 14-3.

Table 14-3
Allocation of Capital Expenditures
(Thousands of Dollars)

Facilities and Construction Divisions	*Expenditures Incurred Through1997*	*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	17,925	3	17,928	1,374	0	16,554	0
Oroville Division	564,796	4,909	569,705	480,234	70,662	18,809	0
Delta Facilities Division	334,350	113,738	448,088	400,972	0	47,116	0
North Bay Aqueduct	94,442	15	94,457	94,457	0	0	0
South Bay Aqueduct	80,437	179	80,616	58,948	7,530	14,138	0
California Aqueduct:							
North San Joaquin Division	261,295	13,298	274,593	265,203	0	9,390	0
San Luis Division	255,523	56,207	311,730	296,569	0	15,161	0
South San Joaquin Division	306,963	5,516	312,479	295,595	0	16,884	0
Tehachapi Division	326,089	3,655	329,744	311,344	0	18,400	0
Mojave Division	338,915	27,580	366,495	327,891	0	38,604	0
Santa Ana Division	258,882	9,602	268,484	236,365	0	32,119	0
West Branch	532,577	24,143	556,720	522,376	0	34,344	0
Coastal Branch	481,605	8,040	489,645	489,645	0	0	0
Subtotal, California Aqueduct	*2,761,849*	*148,041*	*2,909,890*	*2,744,988*	*0*	*164,902*	*0*
Other Project Facilities							
Small Hydroelectric Power Generating Facilities	87,542	47	87,589	87,589	0	0	0
Off-Aqueduct Power Generating Facilities	445,275	15,000	460,275	0 460,275	0	0	0
East Branch Enlargement	451,708	1,751	453,459	453,459	0	0	0
East Branch Extension	2,963	75,126	78,089	78,089	0	0	0
Coastal Branch Extension	26,361	0	26,361	0	0	0	0
San Joaquin Drainage Facilities	55,976	37,340	93,316	0	0	0	93,316
Planning and Preoperations	54,024	49,327	103,351	103,351	0	0	0
Unassigned	305	2,236	2,541	0	0	0	2,541
Subtotal, Project Construction Expenditures	*4,977,953*	*447,712*	*5,425,665*	*4,963,736*	*78,192*	*261,519*	*95,857*
Other Capital Requirements							
Davis-Grunsky Act Program	128,697	1,303	130,000	0	0	0	130,000
Total Capital Expenditures	**5,106,650**	**449,015**	**5,555,665**	**4,963,736**	**78,192**	**261,519**	**225,857**

[a] Reflects the Department's allocation to this purpose, irrespective of federal payments.

[b] Includes costs currently unassigned to purpose, planning costs of deleted features of project facilities, initial costs of inventoried items, joint costs assigned to the federal government, and costs assigned to the Davis-Grunsky Act Program.

Capital Requirements

Lines 1 through 19 in Table 14-1 show actual and projected SWP capital requirements through 2010. Estimates of future capital expenditures include allowances for cost escalation from 1998 through 2010 at 3 percent per year for construction costs and 4 percent per year for right-of-way costs. Capital expenditures for the SWP also include requirements other than those for construction, such as disbursements made as part of the Davis-Grunsky Act Program (Line 15) and special capital requirements under revenue bond financing (Line 16). The Department will decide to construct facilities only after examining alternatives and completing environmental documentation and other review processes.

Line 1, Initial Project Facilities, includes only those facilities completed before 1974 (see Bulletin 132-74, Chapter 2). Additional costs after 1973 and estimated costs of remaining work on the initial SWP facilities are not included.

Line 2, North Bay Aqueduct, Phase II, consists of pipelines, pumping plants, and a small reservoir necessary to divert water from the western Delta to Napa and Solano counties for urban use. Phase II is connected with the Phase I facilities and was completed in 1968 (Phase I costs are included in the initial project facilities discussed in Line 1). Phase II became operational in May 1988.

Line 3, Delta and Suisun Marsh Facilities, shows historical costs in Column 1 that include planning costs for general Delta facilities and historical costs associated with the previously planned Peripheral Canal and overland water delivery facilities for the western Delta.

Also included are historical planning costs for Suisun Marsh as well as construction costs for the Suisun Marsh Salinity Control Gates and an access road. The projected amounts include projected planning costs plus projected costs for constructing four permanent barriers in the Delta and an additional intake at Clifton Court Forebay.

Line 4, Final Four Units at Banks Pumping Plant, includes costs of the final four 1,067-cfs units, which became operational in spring 1992, and final payments for plant equipment.

Line 5, Coastal Branch Aqueduct, Phase II, includes all costs for the planning, design, and construction of Phase II of the Coastal Branch of the California Aqueduct. The first major construction contract for Phase II facilities was awarded in October 1993. Phase II construction was completed in August 1997 at a cost of $478 million. Water deliveries from the Phase II facilities began in August 1997.

Line 6, West Branch Aqueduct, shows costs for all facilities on the West Branch except Warne Powerplant. Warne Powerplant costs are included in Line 10. Projected costs include approximately $9.4 million for Gorman Creek channel modifications.

Line 7, East Branch Enlargement, includes expenditures for first-stage construction of the East Branch Enlargement, including the enlargement share of powerplant costs at Mojave Siphon and Devil Canyon. (The remaining powerplant costs are included in Line 10.) Estimated East Branch Enlargement costs by facility are presented in Table 14-4. Costs for Alamo Powerplant consist of expenditures for Unit 1 facilities allocated to enlargement. Construction of Unit 2 has been deferred.

All costs in Line 7 are allocated to and repaid by the seven Southern California contractors participating in the East Branch Enlargement.

Line 8, East Branch Improvements, shows all aqueduct costs on the East Branch not allocated to the enlargement project. Those costs include improvements constructed concurrently with the enlargement work and the reconstruction of the San Bernardino Tunnel Intake. Costs for powerplant construction at Mojave Siphon and Devil Canyon are not included in this line.

Line 9, East Branch Extension, shows projected expenditures for Phase I of the proposed extension of the East Branch of the California Aqueduct. The East Branch Extension would extend the California Aqueduct east from the Devil Canyon Powerplant to a terminus at Noble Creek near Beaumont in Riverside County. The extension will provide water service to the San Gorgonio Pass Water Agency and the San Bernardino Valley Municipal Water District. All

costs in Line 9 will be allocated to and repaid by the two participating contractors.

Line 10, Power Generation and Transmission Facilities, does not include the East Branch Enlargement share of costs for Devil Canyon, Alamo, and Mojave Siphon powerplants 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. Line 11 includes estimated CALFED program costs for 1998 through 2002 for preliminary planning and environmental impact report preparation. Specific planning activities and projected spending amounts for 1998 through 2010 are shown in Table 14-6. Expenditures for these items are being reviewed. Construction costs of additional conservation facilities are not included in the financial analysis.

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, 1997, the Department had disbursed $129 million (including $8.5 million for administration) in grants and loans for local agencies throughout the State. Funds for Department projects currently authorized will be disbursed before 1999.

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 Lines 1 through 13 and that part of Line 16 associated with revenue bonds sold for power facilities.

Line 19, Water Facilities Capital Requirements, shows the total capital requirements for water facilities included in Lines 1 through 13 and that part of Line 16 associated with revenue bonds sold for water facilities.

Capital Financing

The SWP was constructed with three general types of financing: Burns-Porter, revenue bonds, and capital resources. Lines 20 through 33 of Table 14-1 present specific information about those sources of financing.

Burns-Porter Act. Burns-Porter financing is derived from the sale of California Water Resources Development Bonds (general obligation bonds) and State Tideland Oil Revenues deposited in the California Water Fund as authorized by the Burns-Porter Act (Water Code sections 12930-12944), approved by voters in November 1960. The Burns-Porter Act authorized an issue of $1.75 billion of general obligation bonds of the State, which are repaid by revenues received according to the water supply contracts. Of

Table 14-4
Estimated Capital Costs for East Branch Enlargement

Facility	*Dollar Amounts (in millions)*
Aqueduct and siphons	127.9
Pearblossom Pumping Plant	70.0
Alamo Powerplant	5.0
Mojave Siphon Powerplant	47.3
Devil Canyon Powerplant and Second Afterbay	203.3
Total	**453.5**

Table 14-5
Estimated Capital Costs for Power Generation and Transmission Facilities

Facility	*Dollar Amounts (in millions)*
Powerplants	
Reid Gardner, Unit 4	282.8
Bottle Rock	120.9
South Geysers	49.6
Devil Canyon	36.8
Warne	84.5
Alamo	44.8
Mojave Siphon	28.6
Thermalito Diversion Dam	14.2
Subtotal	*662.2*
Transmission Lines	
Midway-Wheeler Ridge	10.7
Geysers-Lakeville	6.9
Total	**679.8**

Table 14-6
Estimated Future Costs for Planning Additional Conservation Facilities

Activity	*Project Expenditures (in millions)*
Future Water Supply	40.5
CALFED Planning	9.0
Other Planning Costs	8.8
Total	**58.3**

Table 14-7
Application of Revenue Bond Proceeds

Bond Series [a]	Construction Expenditures	Other Capital Requirements: Reimbursement of General Fund	Other Capital Requirements: Capitalized Interest	Other Capital Requirements: Capitalized Operating Costs	Other Capital Requirements: Bond Financing and Refunding Costs [b]		Other Capital Requirements: Subtotal	Total Principal Amount of Bonds	
Oroville	218.0	2.6	19.9	1.5	3.0		27.0	245.0	
Devil Canyon-Castaic	126.4	0.0	10.0	0.7	2.1		12.8	139.2	
Pyramid Series A	74.0	0.0	19.2	1.0	1.6		21.8	95.8	
Reid Gardner Series B	146.1	0.0	41.9	0.0	12.0		53.9	200.0	
Reid Gardner Series C	91.1	0.0	17.9	7.9	8.1		33.9	125.0	
Small Hydro-South Geysers Series D	49.6	0.0	19.9	0.0	5.5		25.4	75.0	
Bottle Rock Series E	96.9	0.0	22.0	3.7	2.4		28.1	125.0	
Alamo-South Geysers Series F	59.1	0.0	14.2	0.0	1.7		15.9	75.0	
Reid Gardner Series G	1.6	0.0	0.0	0.0	237.9	c	237.9	239.5	
Power Facilities Series H	22.2	0.0	0.0	0.0	184.5	d	184.5	206.7	
East Branch Enlargement Series A	108.3	0.0	12.6	0.0	11.1		23.7	132.0	
Water System Facilities Series B	97.4	0.0	0.0	0.0	2.6		2.6	100.0	
Water System Facilities Series C	0.6	0.0	0.0	0.0	8.4	e	8.4	9.0	
Water System Facilities Series D	95.9	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	f	8.6	9.0	
Water System Facilities Series F	0.0	0.0	0.0	0.0	160.0	g	160.0	160.0	
Water System Facilities Series G	86.8	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	h	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	i	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	170.1	j	178.5	335.0	
Water System Facilities Series P	141.6	0.0	5.2	0	13.2		18.4	160.0	
Water System Facilities Series Q	135.0	0.0	8.0	0	123.6	k	131.6	266.6	
Water System Facilities Series R	0.0	0.0	0.0	0	20.7	l	20.7	20.7	
Water System Facilities Series S	78.2	0.0	5.8	0	116.2	m	122.0	200.2	
Water System Facilities Series T	0.0	0.0	0.0	0	135.7	n	135.7	135.7	
Subtotal	*2,422.4*	*2.6*	*243.0*	*14.8*	*2,481.2*		*2,741.6*	*5,164.0*	
Future Water System Facilities Bonds	371.9	0.0	24.3	0.0	8.1		32.3	404.2	
Future East Branch Enlargement Bonds	6.2	0.0	0.4	0.0	0.1		0.5	6.7	
Grand Total	2,800.4	2.6	267.7	14.8	2,489.4		2,774.5	5,574.9	o

[a] Actual bond issue for all except Future Water System facilities and Future East Branch Enlargement bonds.

[b] Bond discount and financing costs include debt service reserves for East Branch Enlargement and Water System Facilities bonds.

[c] Total discount was $2.8 million. Remaining amount was used to refund Reid Gardner Series B bonds.

[d] Total discount was $2.7 million. Remaining amount was used to refund portions of Reid Gardner Series C and Small Hydro-South Geysers Series D Bonds.

[e] Includes funds applied to Water System Facilities Series B and C debt service reserves.

[f] Includes funds applied to Water System Facilities Series D and E debt service reserves.

[g] Includes $11.0 million for debt service reserves and $9.0 million for discounts. Remaining amount was used to refund a portion of Reid Gardner Series bonds.

[h] Includes $26.3 million for debt service reserves and $20.5 million for discounts. Remaining amount was used to refund portions of prior issues of Power Facilities Revenue Bonds and Water System Revenue Bonds.

[i] Includes $11.1 million for discounts. Remaining amount was used to refund portions of prior issues of PFRB and WSRB bonds.

[j] Includes $18.1 million for debt service reserves and $6.9 million for discounts. Remaining amount was used to refund all WSRB Series N bonds.

[k] Includes $13.5 million for debt service reserves and $3.0 million for discounts. Remaining amount was used to refund portions of prior issues of Water System Revenue Bonds.

[l] Includes $0.5 million for bond discount. Remaining amount was used to refund all WSRB Series C and E bonds.

[m] Includes $11.5 million for bond discount and other issue costs. Remaining amount was used to refund portions of WSRB Series J,K,O, and P bonds.

[n] Includes $0.7 million for bond discount. Remaining amount was used to refund all outstanding WSRB Series F bonds.

[o] Includes $2,100.8 million of refunded principal, leaving a net principal obligation of $3,474.1 million.

that authorization, $130 million has been reserved specifically for the Davis-Grunsky Act Program.

Proceeds from the sale of general obligation bonds are deposited in the California Water Resources Development Bond Fund-Bond Proceeds Account, from which monies may be expended only for the construction of SWP facilities and for the Davis-Grunsky Act Program. Approximately 31 percent of the expenditures through 1997 for construction and the Davis-Grunsky Act Program were financed with general obligation bonds.

Monies deposited in the California Water Fund are appropriated for purposes outlined in the Burns-Porter Act. Such deposits are derived from a portion of the State Tideland Oil Revenues according to a continuing authorization. In 1989, legislation was enacted to provide for a schedule to repay the California Water Fund as required by the Burns-Porter Act. In 1998, the Department will finish repayment on the California Water Fund, which totaled $298 million.

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, 1997, the Department had sold $5.2 billion of revenue bonds. That amount includes $200.2 million of Water System Revenue Bonds, Series S, and $135.7 million of Water System Revenue Bonds, Series T, sold July 30, 1997. Additional issues of revenue bonds are planned to fund future SWP construction.

Capital Resources. Capital resources financing is derived from payments and appropriations (including a portion of Tideland Oil Revenues) authorized by a variety of special contracts, cost-sharing agreements, and legislative actions concerning the SWP, plus accrued interest on these funds.

Capital resources revenues are deposited in the Central Valley Water Project Construction Fund and may be expended for paying 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, 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 $481 million of Water System Revenue Bond proceeds have been applied to the East Branch Enlargement project through December 31, 1997. Of this total amount, $416 million was used for construction expenditures and $65 million for bond discounts, interest costs, and debt service reserves.

Line 22, East Branch Enlargement, Future Bonds, shows the Department's estimate of additional bonds required to complete construction of the East Branch Enlargement, first stage, and to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Line 23, Water System Facilities, Current Bonds, shows that through December 31, 1997, $1.3 billion of proceeds from Water System Revenue Bonds, Series A through Series T, were applied to SWP projects other than the East Branch Enlargement. Of this total amount, $1.1 billion was used to pay for construction expenditures and $177 million to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Line 24, Water System Facilities, Future Bonds, shows that future water revenue bonds are needed to provide $357 million for construction of SWP water system facilities and $53 million for bond discounts, interest costs, and debt service reserve requirements.

Line 25, Subtotal, Water Revenue Bonds, is the total of Lines 21 through 24.

Line 26, 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 was 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 27, 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 1999.

Line 28, 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, 1997, was used to finance a total of $508 million of SWP costs.

Line 29, Interim Financing, shows the net annual amounts of money borrowed from (positive number) or repaid into (negative number) the Water Revenue Commercial Paper Notes program. The note program was established in March 1993 to provide an ongoing source of interim financing for Water System Projects prior to permanent financing from the sale of long-term revenue bonds. The Department has authority to issue up to $150 million of Water Revenue Commercial Paper Notes. The financial analysis assumes that all outstanding notes will be repaid before the end of the analysis period.

Line 30, Application of Capital Resources Revenues to Construction, presents the Capital Resources Revenues applied for capital expenditures.

Table 14-1
Capital Requirements and Financing, December 31, 1997
(Thousands of dollars)

Line Number	Line Item	Calendar year 1952-1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Calendar year 2007	2008	2009	2010	Total 1998-2010	Total 1952-2010
	CAPITAL REQUIREMENTS																
1.	Initial Project Facilities	2,202,316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,202,316
2.	North Bay Aqueduct, Phase II	90,488	1	1	1	1	0	0	0	0	0	0	0	0	0	4	90,492
3.	Delta & Suisun Marsh Facilities	240,449	8,892	7,427	29,807	30,995	14,054	9,851	361	0	0	0	0	0	0	101,387	341,836
4.	Final 4 Units at Banks Delta Pumping Plant	43,673	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43,673
5.	Coastal Branch Aqueduct, Phase II	470,675	7,459	0	0	0	0	0	0	0	0	0	0	0	0	7,459	478,134
6.	West Branch Aqueduct	189,124	6,660	15,623	1,852	0	0	0	0	0	0	0	0	0	0	24,135	213,259
7.	East Branch Enlargement	451,708	1,751	0	0	0	0	0	0	0	0	0	0	0	0	1,751	453,459
8.	East Branch Improvements	132,675	14,694	14,583	6,028	0	0	0	0	0	0	0	0	0	0	35,305	167,980
9.	East Branch Extension	2,963	6,534	33,799	34,793	0	0	0	0	0	0	0	0	0	0	75,126	78,089
10.	Power Generation and Transmission Facilities	664,758	3,047	3,000	3,000	3,000	3,000	0	0	0	0	0	0	0	0	15,047	679,805
11.	Additional Conservation Facilities	141,340	4,242	4,891	7,734	7,295	6,749	3,474	3,420	3,421	3,420	3,420	3,421	3,420	3,420	58,327	199,667
12.	San Joaquin Drainage Facilities	55,976	2,695	2,775	2,859	2,902	2,901	2,901	2,901	2,901	2,901	2,901	2,901	2,901	2,901	37,340	93,316
13.	Other Costs	291,808	37,372	37,232	16,055	582	391	199	0	0	0	0	0	0	0	91,831	383,639
14.	**TOTAL PROJECT CONSTRUCTION EXPENDITURES**	4,977,953	93,347	119,331	102,129	44,775	27,095	16,425	6,682	6,322	6,321	6,321	6,322	6,321	6,321	447,712	5,425,665
15.	Davis-Grunsky Act Program Costs	128,697	1,303	0	0	0	0	0	0	0	0	0	0	0	0	1,303	130,000
16.	Special Capital Requirements Under Revenue Bond Financing	567,562 5,674,212	10,794 105,444	6,262 125,593	13,009 115,138	13,036 57,811	9,900 36,995	0 16,425	0 6,682	0 6,322	0 6,321	0 6,321	0 6,322	0 6,321	0 6,321	53,001 502,016	620,563 6,176,228
17.	**TOTAL CAPITAL REQUIREMENTS**																
18.	Power Facilities Capital Requirements	1,242,842	4,785	3,000	3,000	3,000	3,000	0	0	0	0	0	0	0	0	16,785	1,259,627
19.	Water Facilities Capital Requirements	4,431,370	100,659	122,593	112,138	54,811	33,995	16,425	6,682	6,322	6,321	6,321	6,322	6,321	6,321	485,231	4,916,601
	FINANCING OF CAPITAL REQUIREMENTS																
	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	1,162,458
	Water Revenue Bond Proceeds																
21.	East Branch Enlargement, Current Bonds	481,280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	481,280
22.	East Branch Enlargement, Future Bonds	0	6,745	0	0	0	0	0	0	0	0	0	0	0	0	6,745	6,745
23.	Water System Facilities, Current Bonds	1,310,686	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,310,686
24.	Water System Facilities, Future Bonds	0	102,205	40,000	87,000	104,000	71,000	0	0	0	0	0	0	0	0	404,205	404,205
25.	***SUBTOTAL, WATER REVENUE BONDS***	*1,791,966*	*108,950*	*40,000*	*87,000*	*104,000*	*71,000*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*410,950*	*2,202,916*
	Other Capital Financing																
26.	Initial Project Facilities Bond Proceeds	1,452,452	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,452,452
27.	Davis-Grunsky Act Program Bond Proceeds	128,697	1,303	0	0	0	0	0	0	0	0	0	0	0	0	1,303	130,000
28.	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	508,056
29.	Interim Financing	12,242	(13,402)	75,960	15,200	(56,386)	(43,655)	10,041	0	0	0	0	0	0	0	(12,242)	0
30.	Application of Capital Resources Revenues to Construction	566,151	8,593	5,633	8,938	5,697	5,150	1,884	2,182	1,822	1,821	1,821	1,822	1,821	1,821	49,005	615,156
31.	Revenue Transfers Applied	52,190	0	4,000	4,000	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	53,000	105,190
32.	***SUBTOTAL, OTHER CAPITAL FINANCING***	*2,719,788*	*(3,506)*	*85,593*	*28,138*	*(46,189)*	*(34,005)*	*16,425*	*6,682*	*6,322*	*6,321*	*6,321*	*6,322*	*6,321*	*6,321*	*91,066*	*2,810,854*
33.	**TOTAL FINANCING OF CAPITAL REQUIREMENTS**	5,674,212	105,444	125,593	115,138	57,811	36,995	16,425	6,682	6,322	6,321	6,321	6,322	6,321	6,321	502,016	6,176,228

Table 14-2
State Water Project Revenues and Expenditures, December 31, 1997
(Thousands of dollars)

Line Number	Line Item	Calendar year 1952-1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Calendar year 1997-2010	1952-2010
	Project Revenues																
1.	Capital resources revenues	807,564	8,593	5,633	8,938	5,697	5,150	1,884	2,182	1,822	1,821	1,821	1,822	1,821	1,821	49,005	856,569
	Water Contractor Payments																
2.	Transportation capital	2,487,601	131,922	134,736	144,436	149,579	151,247	151,295	151,226	151,168	150,027	150,979	150,935	150,938	150,942	1,919,430	4,407,031
3.	Transportation minimum	3,106,191	219,069	241,861	229,893	225,474	229,234	216,509	211,602	224,674	223,738	223,282	244,557	239,836	243,063	2,972,792	6,078,983
4.	Transportation variable	1,218,357	84,295	106,783	115,473	101,901	96,879	97,801	112,289	70,175	71,279	76,300	82,983	76,475	86,055	1,178,688	2,397,045
5.	Delta Water Charge	1,230,232	93,570	97,000	97,305	98,451	99,119	99,700	100,232	100,485	100,732	100,986	101,473	101,723	101,978	1,292,754	2,522,986
6.	East Branch Enlargement payments	232,076	41,924	42,371	43,821	43,859	43,591	43,547	42,111	42,090	42,809	42,835	41,919	41,981	42,042	554,900	786,976
7.	Water Revenue Bond Surcharge	134,983	50,037	50,727	50,403	51,717	52,430	53,475	54,164	53,872	52,865	52,677	53,413	53,516	53,618	682,914	817,897
8.	*Subtotal water contractor payments*	*8,409,440*	*620,817*	*673,478*	*681,331*	*670,981*	*672,500*	*662,327*	*671,624*	*642,464*	*641,450*	*647,059*	*675,280*	*664,469*	*677,698*	*8,601,478*	*17,010,918*
9.	Revenue bond cover adjustments	0	(38,303)	(39,317)	(40,127)	(40,391)	(40,566)	(38,109)	(37,967)	(39,583)	(39,538)	(39,694)	(43,420)	(43,441)	(43,466)	(523,922)	(523,922)
10.	Rate management adjustments	0	(17,000)	(32,000)	(33,000)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(487,000)	(487,000)
	Other Revenues																
11.	Federal payments for project operating costs	145,159	9,955	10,524	10,420	9,609	9,615	9,615	9,615	9,615	9,615	9,615	9,615	9,615	9,615	127,043	272,202
12.	Appropriations for operating costs allocated to recreation	16,657	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,657
13.	Davis-Grunsky loan repayments	37,913	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	18,200	56,113
14.	Revenue Bond Proceeds	484,597	0	0	0	0	0	0	0	0	0	0	0	0	0	0	484,597
15.	Interest Earnings on Operating Revenue	537,971	6,868	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,100	68,068	606,039
16.	Oroville-Thermalito payments	249,279	0	0	0	0	0	0	0	0	0	0	0	0	0	0	249,279
17.	Miscellaneous revenues	99,987	724	8,400	0	0	0	0	0	0	0	0	0	0	0	9,124	109,111
18.	*Subtotal, other revenues*	*1,571,563*	*18,947*	*25,424*	*16,920*	*16,109*	*16,115*	*16,115*	*16,115*	*16,115*	*16,115*	*16,115*	*16,115*	*16,115*	*16,115*	*222,435*	*1,793,998*
19.	Total operating revenues	9,981,003	584,461	627,585	625,124	606,199	607,549	599,833	609,272	578,496	577,527	582,980	607,475	596,643	609,847	7,812,991	17,793,994
20.	Total operating revenues and Capital Resources Revenues	10,788,567	593,054	633,218	634,062	611,896	612,699	601,717	611,454	580,318	579,348	584,801	609,297	598,464	611,668	7,861,996	18,650,563
	Project Expenses																
21.	Project operations, maintenance, and power costs	4,010,274	331,395	339,312	350,504	328,566	328,584	330,326	337,924	304,220	295,240	302,659	314,437	296,466	313,793	4,173,426	8,183,700
22.	Deposits to Replacement Reserves	96,618	0	0	0	0	0	0	0	0	0	0	0	0	0	0	96,618
23.	Deposits to special reserves	448,440	(14,700)	23,283	4,963	205	(3,443)	(8,063)	(6,462)	(9,709)	(698)	(2,677)	(4,709)	2,306	(1,198)	(20,902)	427,538
24.	Capital resources expenditures	603,475	8,593	5,633	8,938	5,697	5,150	1,884	2,182	1,822	1,821	1,821	1,822	1,821	1,821	49,005	652,480
	Payments of Debt Service																
25.	Principal repayments on bonds sold through December 31, 1997 (current bonds)	1,217,851	77,279	85,521	89,135	92,804	96,715	91,925	96,490	107,630	112,260	118,050	138,850	146,125	152,985	1,405,769	2,623,620
26.	Interest on bonds sold through December 31, 1997 (current bonds)	4,068,749	183,487	175,469	171,079	166,523	161,363	156,338	151,487	146,519	140,893	135,107	129,066	121,910	114,437	1,953,678	6,022,427
27.	Future East Branch enlargement bond principal repayments	0	0	0	105	105	110	115	120	125	130	135	145	150	155	1,395	1,395
28.	Future East Branch enlargement bond interest payments	0	0	0	330	325	321	317	312	307	302	297	290	283	275	3,359	3,359
29.	Future Water Bond principal repayments	0	0	0	1,255	2,750	4,010	4,940	5,525	5,830	6,145	6,490	6,850	7,250	7,665	58,710	58,710
30.	Future Water Bond interest payments	0	0	0	3,753	10,421	15,389	19,435	19,376	19,074	18,755	18,419	18,046	17,653	17,235	177,556	177,556
31.	**Total Principal**	1,217,851	77,279	85,521	90,495	95,659	100,835	96,980	102,135	113,585	118,535	124,675	145,845	153,525	160,805	1,465,874	2,683,725
32.	**Total Interest**	4,068,749	183,487	175,469	175,162	177,269	177,073	176,090	171,175	165,900	159,950	153,823	147,402	139,846	131,947	2,134,593	6,203,342
33.	*Subtotal Debt Service*	*5,286,600*	*260,766*	*260,990*	*265,657*	*272,928*	*277,908*	*273,070*	*273,310*	*279,485*	*278,485*	*278,498*	*293,247*	*293,371*	*292,752*	*3,600,467*	*8,887,067*
34.	**Total Operating Expenses and Debt Service**	10,445,407	586,054	629,218	630,062	607,396	608,199	597,217	606,954	575,818	574,848	580,301	604,797	593,964	607,168	7,801,996	18,247,403
35.	Net System Revenues	343,160	7,000	4,000	4,000	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	60,000	403,160
	Application of Net System Revenues																
36.	California Water Fund Repayment	290,970	7,000	0	0	0	0	0	0	0	0	0	0	0	0	7,000	297,970
37.	Revenues used for capital expenditures	52,190	0	4,000	4,000	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	53,000	105,190

Line 31, 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 1998 through 2010 include funds to finance expenditures for San Joaquin drainage facilities, as indicated in Line 12 of Table 14-1, and expenditures for additional conservation facilities, as indicated in Line 11.

Line 32, Subtotal, Other Capital Financing, is the total of Lines 26 through 31.

Line 33, Total Financing of Capital Requirements, totals Lines 20, 25, and 32.

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 1998 through 2010. Data on annual revenues and expenditures are presented in Table 14-2. A detailed discussion of each line item is presented below.

Project Revenues

SWP revenues consist primarily of SWP contractor payments required under their individual long-term water supply contracts. Those revenues are deposited in two funds: the Central Valley Water Project Revenue Fund, where all revenues pledged to revenue bonds are placed, and the California Water Resources Development Bond Fund-Systems Revenue Account, where all other SWP operating revenues are placed. Use of those funds is limited to paying operating costs and debt service, except that revenues in excess of those costs may be transferred to the California Water Fund.

Line 1, Capital Resources Revenues, includes:

- federal payments for SWP capital expenditures;
- appropriations for capital costs allocated to recreation;
- appropriations for SWP capital expenditures prior to passage of the Burns-Porter Act and according to Senate Bill 261 (1968);
- payments from Los Angeles Department of Water and Power for Castaic power development;
- advances from water contractors for construction of requested works;
- investment earnings on the Capital Resources Account; and
- investment earnings on unexpended revenue bond proceeds.

Historically, appropriations for capital costs allocated to recreation and fish and wildlife enhancement have amounted to $5 million per year, which has been appropriated by the California Legislature from Tideland Oil Revenues. According to legislation enacted in 1989, the amount owed to the SWP by the State for costs allocated to recreation and fish and wildlife enhancement is offset against the amount the SWP owes to the California Water Fund.

Lines 2 through 7, 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 7.

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 securities issued and loans obtained to finance SWP facilities, excluding Oroville Revenue Bonds.

According to the original contract provisions, the basis for determining the Project Interest Rate was the weighted average of rates paid on general obliga-

tion 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 1999 water charges to be billed July 1, 1998. However, information about significant differences between the sum of future charges included in Lines 2 through 7

Table 14-8
Effect of Revenue Bond Proceeds on Project Interest Rate
(Millions of Dollars)

Project	*Revenue Bond Proceeds*					*Percentage of Total Amount Included in Calculating Project Interest Rate*
	Applied to Construction Costs	*Less Portion of Proceeds Derived from Interest Earnings Prior to Delivery of Bonds*	*Plus Bond Discount and Financing Costs*	*Subtotal, Proceeds Included in Calculating Project Interest Rate*	*Total Principal Amount of Bonds*	
Devil Canyon-Castaic Project Revenue Bonds	125.3	1.5	1.4	125.2	139.2	90.0
Pyramid Project Revenue Bonds (Series A)	71.2	0.5	1.1	71.8	95.8	75.0
Alamo Project Bond Anticipation Note	16.8	0.1	0.3	17.0	24.4	70.0
Small Hydro Project I Revenue Bonds (Series D)	25.4	0.2	1.5	26.7	37.5	71.0
Alamo Project Revenue Bonds (Series F)	38.9	0.3	0.7	39.3	50.0	79.0
Power Facilities						
Revenue Bonds (Series H)						
Facility						
Pyramid Project	5.0	0.0	0.1	5.1	5.1	100.0
Alamo Project	1.7	0.0	0.0	1.7	1.7	100.0
Small Hydro Project I	25.2 [a]	0.2	0.4	25.4	35.6	71.0
Water System Revenue Bonds (Series J)						
Facility						
Pyramid Project	–	–	75.9 [b]	75.9	99.2 [b]	77.0
Alamo Project	–	–	45.6 [b]	45.6	57.1 [b]	80.0
Small Hydro Project I	–	–	27.8 [b]	27.8	38.8 [b]	72.0
Water System Revenue Bonds (Series L)						
Facility						
Small Hydro Project I	–	–	1.5 [b]	1.5	2.1 [b]	71.0
Water System Revenue Bonds (Series Q)						
Facility						
Pyramid Project	–	–	3.0 [b]	3.0	3.9 [b]	77.0
Alamo Project	–	–	4.8 [b]	4.8	6.0 [b]	80.0
Water System Revenue Bonds (Series S)						
Facility						
Pyramid Project	–	–	8.0 [b]	8.0	10.4 [b]	77.0
Alamo Project	–	–	7.6 [b]	7.6	9.5 [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 [d]	8/08/72	4,776,204	258,839	5.419	4.457
$ 10,000,000 Series T Water Bonds	3/20/73	185,265	9,491	5.123	4.459
$ 10,000,000 Series U Water Bonds	1/13/76	158,750	8,731	5.500	4.462
$ 10,000,000 Series V Water Bonds	11/15/77	158,750	7,573	4.770	4.462
$ 95,800,000 Pyramid Hydroelectric Revenue Bonds [d]	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 [d]	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 [d]	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 [d]	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 [d]	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	
$135,665,000 Series T Water System Revenue Bonds	7/30/97	1,310,620	66,942	5.108	
Total		**169,477,799**	**10,054,619**		
Portion allocated to Project Interest Rate		**63,850,559**	**2,946,794**	**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 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, or water system facilities as defined in the Water Revenue Bond Amendment.

[d] These revenue bonds and revenue bond anticipation notes were sold at the following net interests costs. The amount indicated (representing the sum of proceeds used for construction and the bond discount) were used in the calculation of the Project Interest Rate:

Devil Canyon-Castaic Revenue Bonds:	5.446 percent	$ 126,893,000
Pyramid Hydroelectric Revenue Bonds:	7.680 percent	$ 75,586.000
Alamo Bond Anticipation Notes:	10.036 percent	$ 18,034,000
Small Hydro Project I, Series D Revenue Bonds:	10.275 percent	$ 28,012,000
Alamo Project, Series F Revenue Bonds:	8.525 percent	$ 40,114,000
Power Facilities, Series H Revenue Bonds:	7.926 percent	$ 42,340,000

of Table 14-2 and the substantiation of 1999 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, 1997. Those costs presented in the financial analysis include allowances for price escalation.
- Pre-1998 charges in Appendix B represent charges as they should have been according to currently known conditions. Pre-1998 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 1998 and thereafter have been adjusted for any apparent overpayments or underpayments of pre-1998 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 T bonds. Charges in Table 14-2 also include amounts of the debt service and cover for assumed future bonds.
- The water bond revenue surcharge in Appendix B applies only to the Series B through Series T bonds. Surcharge values included in Table 14-2 apply to Series B through Series T bonds and to assumed future issues required to finance SWP construction costs included in Table 14-1.

Line 8, Subtotal, Water Contractor Payments, is the total of Lines 2 through 7.

Line 9, 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, such as:

- minimum OMP&R component of the Transportation Charge for Off-Aqueduct Power Facilities;
- Water System Revenue Bond Surcharge;
- capital cost component of the Transportation Charge for East Branch Enlargement Facilities;
- capital cost component of the Transportation Charge for Coastal Branch Extension Facilities; and
- capital cost component of the Transportation Charge for East Branch Extension Facilities.

Line 10, 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 11, 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 reviewed every 5 years by USBR and the Department. For calendar years 1981 through 1986, the federal share of operations and maintenance costs was 44.47 percent. The most recent review of the percentage paid by the USBR was completed in 1987 and resulted in a federal share of 44.09 percent for calendar years 1987 through 1997. The amounts in Line 10 are based on the assumption that the federal share will continue at 44.09 percent for calendar years 1998 through 2010.

Line 12, 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 paid by annual appropriations from the General Fund. For fiscal years 1983-84 through 1996-97, no funds were appropriated for recreation and fish and wildlife enhancement purposes. No appropriations are indicated for 1998 through 2010.

According to legislation enacted in 1989, the amount owed to the SWP by the State for costs allocated to recreation and to fish and wildlife enhancement is offset against the amount the SWP owes to the California Water Fund.

Line 13, Local Agency Payments under Davis-Grunsky Loan Repayment Contracts, shows repayment for $52.5 million of loans disbursed as of December 31, 1997. Repayment on any future loans was assumed to be beyond the period covered by the financial analysis.

Line 14, Revenue Bond Proceeds, includes bond proceeds classified as special reserves according to the description of revenue bond financing in Line 16 of Table 14-1. Those proceeds, used for capitalized OMP&R costs, revenue bond service, and debt service reserves, are not classified as revenues but are included in this line to simplify the financial presentation.

Line 15, 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 16, 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 1952-97 entry includes amounts of final settlement of payments made according to the contract.

Line 17, Miscellaneous Revenues, includes all other operating revenues not included in Lines 2 through 16.

Line 18, Subtotal, Other Revenues, is the total of Lines 11 through 17.

Line 19, Total Operating Revenues, is the total of Lines 8, 9, 10, and 18.

Line 20, Total Operating Revenues and Capital Resources Revenues, is the total of Lines 1 and 19.

Project Expenses

Project expenses include:

- operations, maintenance, and power costs;
- deposits to replacement reserves;
- deposits to special reserves;
- capital resources expenditures; and
- debt service.

Revenue bond proceeds earmarked for debt service during construction and the first year's operating expenses are deposited in the Central Valley Water Project Construction Fund and disbursed according to resolutions authorizing the issuance of such bonds.

Water contractor revenues associated with power facility operating costs and debt service are deposited in the Central Valley Water Project Revenue Fund for appropriate disbursement. All other operating revenues are deposited in the California Water Resources Development Bond Fund-Systems Revenue Account and are disbursed according to the following four priorities of use as specified in the Burns-Porter Act:

1. SWP operations, maintenance, power, and replacement costs;
2. general obligation bond debt service;
3. repayment of expenditures from the California Water Fund; and
4. deposits to a reserve for future SWP construction.

Project expenses are presented in Lines 21 through 33 of Table 14-2.

Line 21, Project Operations, Maintenance, and Power Costs, shows the OM&P portion of the historical and projected costs presented in Table 14-10 on page 191.

Table 14-10 and Line 21 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 11 and 12.

Allowances for cost escalations are included in OM&P costs through the year 2000. Allowances for additional long-term price escalations in the future are not included in these estimates because changes in OM&P costs do not substantially affect the overall results of the financial analysis. (For the most part, changes in OM&P costs cause direct offsetting changes in operating revenues.)

Power costs make up the major item of annual operating expenses for the SWP. Assumptions about future power sources and costs are discussed in Chapter 10, “Power Resources.” Line 21 also includes costs associated with power transactions that result in the sale of power not required for the delivery of water.

Line 22, Deposits to Replacement Reserves, shows funds set aside as required by contract for replacing existing SWP facilities. As of December 31, 1997, $42 million had been spent for replacement costs; the balance of the replacement reserve as of that date was $55 million. Replacement reserve amounts are also included in Table 14-10.

Line 23, Deposits to Special Reserves Under Revenue Bond Financing, includes two significant components: special reserve deposits related to revenue bonds and capital resources revenue carryover from prior years used for construction in the current year. Special reserve deposits are the net of several income and expenditure items. Income items related to revenue bonds are as follows:

- proceeds set aside to pay bond interest during construction (capitalized interest);
- proceeds set aside for first year operating costs (capitalized operations and maintenance);
- water contractor payments or bond proceeds set aside for debt service reserves;
- water contractor payments for revenue bond cover requirements; and
- deposits to and withdrawals from operating reserves to meet day-to-day cash flow requirements.

The 1952-97 column also includes advances to the Department's revolving fund for working funds to purchase mobile equipment and to meet day-to-day operating expenses.

The expenditure items related to revenue bonds are as follows:

- debt service cover payments returned to water contractors;
- debt service reserve payments returned to water contractors;
- surplus account funds returned to water contractors or applied to meet expenses;
- total capitalized interest paid out; and
- total capitalized operations and maintenance paid out.

Special reserves, reduced over time as reserved amounts, are used for their respective purposes. The amount indicated each year in Line 23 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 24, Capital Resources Expenditures, includes the amount of capital resources revenues applied to construction that is shown in Line 30 of Table 14-1. In Table 14-2, these expenditures are funded out of withdrawals from the reserves in Line 23 and do not affect net revenues shown in Line 35.

Lines 25 and 26, Payment of Debt Service on Bonds Sold through December 31, 1997, show the total principal and interest payments on bonds sold to date. Table 14-11 on page 192 summarizes payments on general obligation bonds (Series A through Y water bonds), power revenue bonds by project, and water system revenue bonds.

The last bonds, sold on July 30, 1997, were the Series T Water System Revenue Bonds. Proceeds from the Series T bonds were used to refinance previously issued bonds and to pay for bond financing costs.

Line 26 also includes more than $0.3 million in interest payments to the General Fund for the temporary loan of $46.8 million in 1970. That loan was repaid by proceeds from the sale of Series N Water Bond Anticipation Notes.

Lines 27 and 28, Payments on Projected East Branch Enlargement Bonds, include the projected annual service amounts for future water revenue bonds included on Line 22 of Table 14-1 for the East Branch Enlargement. 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 29 and 30, Payments on Projected Future Water Bonds, include amounts of the projected annual service for future water revenue bonds included on Line 24 of Table 14-1 for water system facilities. Assumptions about the service on these future bonds are the same as those indicated above for Lines 27 and 28.

Lines 31 and 32, Total Payments of Bond Debt Service, show the total of principal payments indicated on Lines 25, 27, and 29 and the total of interest repayments indicated on Lines 26, 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 21, 22, 23, 24, and 33.

Line 35, Net System Revenues, shows the annual amounts of revenues remaining after the payment of operating costs and bond debt service costs.

Line 36, California Water Fund Repayment, shows repayments according to the Burns-Porter Act, which requires that after operation, maintenance, replacement, and bond service requirements have been satisfied, SWP revenues be transferred to the California Water Fund to reimburse the fund for monies expended for construction of the State Water Resources Development System.

In 1982 and 1983, the Department transferred $70 million toward the repayment of the California Water Fund. The legislature subsequently appropriated all these funds to the State's General Fund. Legislation enacted in 1989 provided for the orderly, scheduled reimbursement of the remaining balance owed to the California Water Fund over a period of 10 years. A portion of this reimbursement is to be offset by the amounts owed to SWP by the State for costs allocated to recreation and fish and wildlife enhancement.

As of December 31, 1997, reimbursements to the California Water Fund totaled $501 million. Of this total approximately $291 million was direct repayments and $210 million was offsets for recreation and fish and wildlife enhancement expenditures to date.

It is projected that repayment of the California Water Fund will be completed in 1998.

Line 37, Revenues Used for Capital Expenditures, includes the amounts required annually for financing scheduled capital expenditures. Also included in this line are projected expenditures to support the Bay-Delta Advisory Council and other programs required to comply with the Bay-Delta Agreement signed in December 1994. 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 1998 and 2001. The unit rates in Table 14-12 include costs of existing and future SWP facilities accounted for in Tables 14-1

and Table 14-7. The unit charges are based on the assumption that in 1998 and 2001, the SWP will be able to deliver the entire amounts of water requested by contractors. The unit water charges included in Table 14-12 are listed both as unescalated 1997 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 1998 through 2010. The escalation rates for future power sources vary, depending on the source of energy.

Table 14-12
Estimated Unit Water Charges for 1999 and 2004, by Service Area
(Dollars per Acre-Foot)

	1999		*2004*	
Service Area and Charge	*Unescalated*	*Escalated*	*Unescalated*	*Escalated*
Feather River Area				
Capital; Operations, Maintenance, and Replacement (OM&R)	69	69	26	26
North Bay Area				
Capital; OM&R	168	168	155	156
Power	12	12	13	13
Total	**180**	**180**	**168**	**169**
South Bay Area				
Capital; OM&R	81	81	81	83
Power	32	32	31	33
Total	**113**	**113**	**112**	**116**
Coastal Area				
Capital; OM&R	689	689	485	487
Power	80	80	78	80
Total	**769**	**769**	**563**	**567**
San Joaquin Area				
Capital; OM&R	50	50	50	51
Power	15	15	14	15
Total	**65**	**65**	**64**	**66**
Southern California Area				
Capital; OM&R	156	156	146	148
Power	77	77	78	83
Total	**233**	**233**	**224**	**231**

Information for this chapter was provided by the State Water Project Analysis Office in conjunction with the Division of Fiscal Services.

Table 14-10
Operations, Maintenance, Power, and Replacement Costs, by Facility, Composition, and Purpose
(Thousands of dollars)

Feature	Calendar year 1962-1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Calendar year 2007	2008	2009	2010	2011-2035	TOTAL
Project Facility																
Feather River facilities	126,291	7,748	5,139	3,803	2,310	2,376	2,377	2,400	2,364	2,362	2,366	2,371	2,363	2,372	59,980	226,622
North Bay Aqueduct	18,851	2,367	2,369	2,414	2,407	2,421	2,457	2,506	2,394	2,398	2,416	2,437	2,422	2,452	65,336	115,647
Delta facilities	314	0	0	0	0	0	0	0	0	0	0	0	0	0	0	314
Suisun Marsh	13,427	2,389	1,991	2,042	2,286	2,287	2,287	2,287	2,287	2,287	2,287	2,287	2,287	2,287	52,472	95,190
South Bay Aqueduct	128,426	8,314	9,852	9,974	9,779	9,806	9,749	9,969	9,243	9,240	9,296	9,384	9,262	9,393	246,153	497,840
California Aqueduct																
Delta to Edmonston	1,635,641	136,982	147,498	156,112	145,063	142,651	146,690	151,038	136,699	134,711	140,032	145,611	136,715	145,306	4,108,734	7,609,483
Edmonston to Perris	1,317,734	101,169	104,631	108,239	100,003	96,675	108,576	112,256	93,131	93,764	95,864	101,465	95,135	102,659	3,176,473	5,807,774
West Branch	6,104	819	(3,011)	(4,569)	(6,181)	(710)	(15,760)	(17,256)	(17,103)	(18,526)	(18,654)	(18,274)	(20,729)	(19,813)	(574,285)	(727,948)
Coastal Branch	60,413	7,513	8,287	8,472	8,325	8,350	9,087	9,350	8,453	8,433	8,480	8,584	8,439	8,595	228,314	399,095
Off-Aqueduct power generating facilities	687,354	50,747	48,119	48,039	47,669	47,619	47,569	47,569	47,569	47,569	47,569	47,569	47,569	47,539	122,713	1,432,782
Recreation, planning, and CVP negotiations	0	0	0	0	574	574	574	574	574	574	574	574	574	574	14,340	20,080
Water quality monitoring	184,178	16,154	17,085	18,468	18,666	18,717	18,751	19,111	18,363	12,183	12,183	12,183	12,183	12,183	258,664	649,072
Davis-Grunsky Act Program	4,963	228	235	242	246	246	246	246	246	246	246	246	246	246	6,147	14,275
Subtotal	*4,183,696*	*334,430*	*342,195*	*353,236*	*331,147*	*331,012*	*332,603*	*340,050*	*304,220*	*295,241*	*302,659*	*314,437*	*296,466*	*313,793*	*7,765,041*	*16,140,226*
Payments to\credits from PG&E under Comprehensive Agreement	(41,783)	(3,035)	(2,883)	(2,732)	(2,581)	(2,429)	(2,278)	(2,127)	0	0	0	0	0	0	0	(59,848)
Total OMP&R Costs	4,141,913	331,395	339,312	350,504	328,566	328,583	330,325	337,923	304,220	295,241	302,659	314,437	296,466	313,793	7,765,041	16,080,378
Composition																
Salaries and expenses of headquarters personnel	774,292	72,672	76,236	77,796	80,336	80,728	80,366	80,725	79,620	73,441	73,431	73,430	73,433	73,430	1,797,132	3,567,065
Salaries and expenses of field personnel	1,409,039	119,623	106,245	103,286	96,434	96,467	96,861	96,861	97,222	97,221	97,221	97,221	97,221	97,221	2,418,145	5,126,288
Pumping power																
Used by pumping plants	2,103,435	165,834	206,233	222,381	197,391	198,328	208,542	214,259	184,138	180,504	190,255	205,662	184,532	205,622	6,370,076	11,037,192
Produced by generation plants	(776,294)	(74,696)	(94,901)	(98,542)	(90,959)	(92,406)	(101,011)	(99,640)	(104,605)	(103,770)	(106,093)	(109,721)	(106,565)	(110,295)	(2,949,925)	(5,019,421)
Payments to\credits from PG&E under Comprehensive Agreement	(41,783)	(3,035)	(2,883)	(2,732)	(2,581)	(2,429)	(2,278)	(2,127)	0	0	0	0	0	0	0	(59,848)
Off-Aqueduct power generating facilities requirement	687,354	50,747	48,119	48,039	47,669	47,619	47,569	47,569	47,569	47,569	47,569	47,569	47,569	47,539	122,713	1,432,782
Oroville-Thermalito insurance premiums	9,950	250	263	276	276	276	276	276	276	276	276	276	276	276	6,900	20,399
Less: Portion of costs incurred during construction	(121,287)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(121,287)
Subtotal	*4,044,705*	*331,395*	*339,312*	*350,504*	*328,566*	*328,583*	*330,325*	*337,923*	*304,220*	*295,241*	*302,659*	*314,437*	*296,466*	*313,793*	*7,765,041*	*15,983,170*
Deposits to replacement reserves	97,208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97,208
Total OMP&R Costs	4,141,913	331,395	339,312	350,504	328,566	328,583	330,325	337,923	304,220	295,241	302,659	314,437	296,466	313,793	7,765,041	16,080,378
Project Purpose																
Water supply and power generation	3,982,292	315,250	322,491	333,330	312,265	311,954	313,485	321,042	285,202	277,224	284,543	296,142	278,562	295,615	7,315,784	15,245,181
Payments to\credits from PG&E under Comprehensive Agreement	(41,783)	(3,035)	(2,883)	(2,732)	(2,581)	(2,429)	(2,278)	(2,127)	0	0	0	0	0	0	0	(59,848)
Recreation and fish and wildlife enhancement	75,407	8,448	8,401	8,781	8,560	8,730	8,790	8,677	8,691	7,691	7,789	7,967	7,576	7,850	190,960	374,318
Flood control	2,508	230	261	255	257	257	257	260	256	255	256	257	257	257	6,504	12,327
Miscellaneous purposes																
Federal share, San Luis, and Delta facilities	118,744	9,955	10,524	10,420	9,609	9,615	9,615	9,615	9,615	9,615	9,615	9,615	9,615	9,615	240,385	486,172
Other (Davis-Grunsky, drainage,City of Los Angeles)	4,745	547	518	450	456	456	456	456	456	456	456	456	456	456	11,408	22,228
Total OMP&R Costs	**4,141,913**	**331,395**	**339,312**	**350,504**	**328,566**	**328,583**	**330,325**	**337,923**	**304,220**	**295,241**	**302,659**	**314,437**	**296,466**	**313,793**	**7,765,041**	**16,080,378**

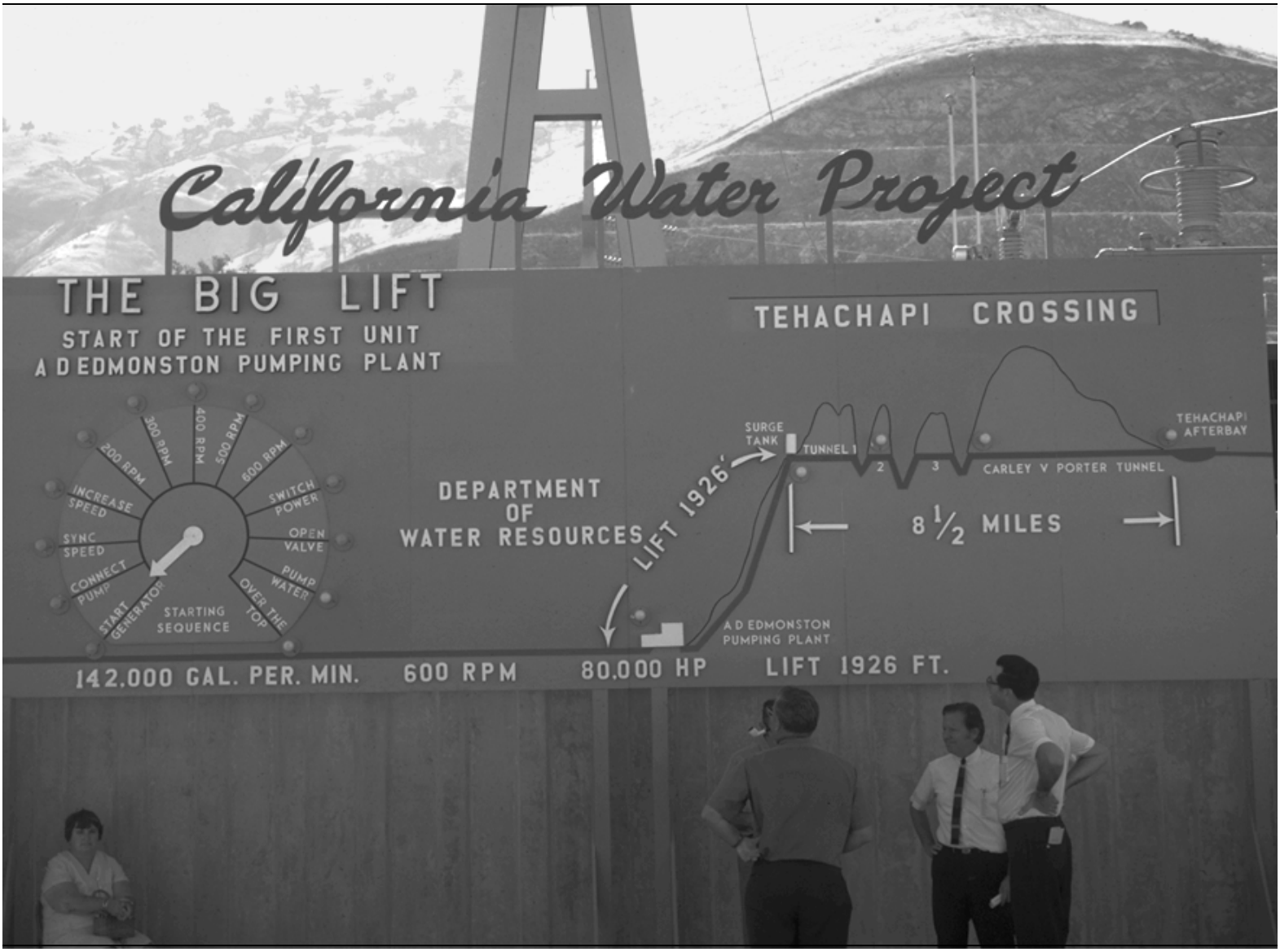
Table 14-11
Annual Debt Service on Bonds Sold through December 31, 1997
(Thousands of dollars)

Calendar Year	Series A through Y Water Bonds		Oroville Revenue Bonds [a]		Devil Canyon-Castaic Project Revenue Bonds		Pyramid Project Power Facilities Revenue Bonds, Series A and H; Water System Revenue Bonds, Series J, Q, and S		Reid Gardner Project Power Facilities Revenue Bonds, Series B, C, G and H; Water System Revenue Bonds, Series F, J, Q, S, and T		South Geysers Project Power Facilities Revenue Bonds, Series D, F, and H; Water System Revenue Bonds, Series D, E, J, L, Q, R, and S		Bottle Rock Project Power Facilities Revenue Bonds, Series E; Water System Revenue Bonds, Series D, E, J, Q, and R		Small Hydro Project Power Facilities Revenue Bonds, Series D and H; Water System Revenue Bonds, Series D, E, J, L, Q, R, and S		Alamo Project Power Facilities Revenue Bonds, Series F and H; Water System Revenue Bonds, Series J, Q, and S		East Branch Enlargement Project Water System Revenue Bonds, Series A, D, E, H, I, J, K, L, M, N, O, P, Q, R, and S		Water System Facilities Water System Revenue Bonds, Series B, C, D, E, G, H, I, J, K, L, M, N, O, P, Q, R, and S		Coastal Extension Facilities Water System Revenue Bonds, Series Q		East Branch Extension Facilities Water System Revenue Bonds, Series S		Grand Total	
	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,333
1965	0	11,114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,114
1966	0	16,742	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,742
1967	0	26,912	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26,912
1968	0	37,760	0	3,876	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41,636
1969	0	47,461	0	10,448	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57,909
1970	0	53,291	0	13,145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66,436
1971	0	63,035	0	13,145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76,180
1972	0	69,148	1,260	13,112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,260	82,260
1973	1,200	69,348	1,330	13,042	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,530	90,098
1974	3,000	69,533	1,400	12,969	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,400	90,210
1975	5,000	69,366	1,475	12,893	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,475	89,967
1976	7,000	69,408	1,555	12,811	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,555	89,927
1977	10,200	69,323	1,635	12,727	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,835	89,758
1978	12,700	69,312	5,775	12,537	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,475	89,557
1979	13,650	68,690	11,585	12,275	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25,235	88,673
1980	16,050	67,968	3,265	11,739	0	7,708	0	7,900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19,315	95,315
1981	18,050	67,109	4,885	11,444	0	7,708	0	7,292	0	5,312	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22,935	98,865
1982	19,250	66,162	17,920	10,968	0	7,708	0	7,292	0	14,347	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37,170	106,477
1983	20,520	65,148	21,110	10,147	900	7,708	0	7,292	0	35,719	0	4,777	0	6,017	0	3,727	0	2,449	0	0	0	0	0	0	0	0	42,530	142,984
1984	21,785	64,068	10,005	9,013	955	7,647	640	7,292	0	35,719	0	5,647	0	10,315	0	3,727	0	4,198	0	0	0	0	0	0	0	0	33,385	147,626
1985	22,555	63,932	12,700	8,628	1,010	7,583	675	7,238	9,425	27,209	0	5,647	0	10,315	0	3,727	0	4,198	0	0	0	0	0	0	0	0	46,365	138,477
1986	23,830	61,742	11,435	7,859	1,070	7,515	715	7,377	3,805	32,882	0	5,516	1,240	10,315	0	3,537	0	4,263	0	4,021	0	0	0	0	0	0	42,095	145,027
1987	25,495	60,492	11,715	7,188	1,135	7,442	790	7,513	4,860	32,605	0	5,386	1,305	10,253	0	3,348	265	4,329	0	9,651	0	4,952	0	0	0	0	45,565	153,159
1988	26,770	59,165	6,685	6,664	1,205	7,366	830	7,447	5,065	32,295	580	5,521	1,390	10,849	345	3,348	280	4,314	995	9,875	710	11,037	0	0	0	0	44,855	157,881
1989	28,145	57,825	33,705	5,513	1,275	7,284	875	7,378	7,820	27,557	709	5,646	1,565	11,592	365	3,328	295	4,298	1,078	10,100	1,148	14,373	0	0	0	0	76,980	154,894
1990	29,385	56,473	10,385	4,301	1,355	7,198	930	7,305	6,675	29,781	761	5,596	1,678	11,491	405	3,304	320	4,279	1,134	10,048	1,227	19,555	0	0	0	0	54,255	159,331
1991	30,365	55,070	12,055	3,922	1,435	7,107	980	7,227	7,170	29,302	818	5,535	1,791	11,376	430	3,276	335	4,257	1,197	16,856	2,129	27,569	0	0	0	0	58,705	171,497
1992	31,745	54,233	14,135	2,985	1,520	7,010	2,395	5,308	8,950	27,188	1,934	4,136	4,575	7,942	960	2,553	1,260	3,086	2,583	22,241	5,108	28,411	0	0	0	0	75,165	165,093
1993	33,390	52,707	13,755	2,237	1,610	6,907	1,525	5,688	8,820	26,953	901	4,256	3,264	8,385	445	2,640	755	3,300	3,039	21,428	4,577	29,965	0	0	0	0	72,081	164,466
1994	35,075	51,274	35,225	934	1,705	6,799	1,580	5,634	78,457	26,273	1,588	4,072	3,374	8,270	695	2,569	780	3,274	4,567	20,752	5,910	38,223	0	0	0	0	168,956	168,074
1995	36,210	49,701	0	0	1,810	6,684	1,635	5,570	5,420	19,230	1,695	4,005	3,521	8,133	745	2,536	805	3,242	4,979	20,499	8,064	37,879	0	0	0	0	64,884	157,479
1996	37,520	48,072	0	0	1,920	6,561	2,320	5,486	49,465	18,130	3,043	3,909	3,682	7,974	3,135	2,464	1,055	3,203	4,771	23,240	10,459	58,170	0	0	0	0	117,370	177,209
1997	37,215	46,412	0	0	2,035	6,432	1,695	5,274	7,515	15,255	1,825	3,698	3,861	7,707	585	2,283	875	3,073	6,300	23,697	14,375	67,819	0	1,981	0	0	76,281	183,631
1998	37,295	44,785	0	0	2,155	6,295	1,770	5,237	5,045	16,144	1,935	3,640	4,030	7,525	625	2,258	910	3,059	6,760	23,972	16,754	68,743	0	1,829	0	0	77,279	183,487
1999	38,220	43,180	0	0	2,285	6,160	1,845	5,149	9,310	11,580	2,081	3,549	4,240	7,324	680	2,229	960	3,014	7,352	23,604	18,483	67,622	0	1,829	65	229	85,521	175,469
2000	39,510	41,524	0	0	2,420	6,040	1,925	5,053	9,765	11,115	1,950	3,449	4,470	7,103	610	2,197	1,010	2,964	8,484	23,191	18,921	66,388	0	1,829	70	226	89,135	171,079
2001	40,600	39,806	0	0	2,565	5,912	2,025	4,949	10,255	10,624	2,045	3,343	4,720	6,862	640	2,164	1,065	2,910	8,915	22,749	19,904	65,152	0	1,829	70	223	92,804	166,523
2002	41,740	38,041	0	0	2,720	5,773	2,115	4,837	10,775	10,110	2,160	3,231	4,990	6,602	680	2,129	1,125	2,851	9,381	22,068	20,954	63,672	0	1,829	75	220	96,715	161,363
2003	43,590	36,219	0	0	2,885	5,626	2,215	4,719	1,770	9,567	2,290	3,110	5,285	6,323	705	2,091	1,190	2,788	9,855	21,558	22,065	62,291	0	1,829	75	217	91,925	156,338
2004	45,730	34,305	0	0	3,055	5,470	2,330	4,593	1,865	9,473	2,425	2,979	5,610	6,022	795	2,051	1,260	2,720	9,253	21,011	24,087	60,821	0	1,829	80	213	96,490	151,487
2005	47,020	32,306	0	0	3,240	5,305	2,530	4,457	8,470	9,374	2,750	2,839	5,950	5,696	1,135	2,005	1,375	2,647	9,741	20,506	25,334	59,346	0	1,829	85	209	107,630	146,519
2006	48,275	30,248	0	0	3,435	5,130	2,680	4,308	8,970	8,886	2,920	2,676	6,325	5,345	1,180	1,938	1,450	2,566	10,847	19,975	26,088	57,787	0	1,829	90	205	112,260	140,893
2007	49,765	28,126	0	0	3,640	4,945	2,830	4,147	9,455	8,360	3,100	2,501	6,730	4,966	1,250	1,867	1,540	2,479	11,441	19,402	27,444	56,284	765	1,829	90	201	118,050	135,107
2008	51,755	25,938	0	0	3,860	4,749	3,070	3,978	24,910	7,801	3,315	2,315	7,245	4,562	1,265	1,792	1,645	2,386	11,317	18,791	29,563	54,774	810	1,783	95	197	138,850	129,066
2009	54,095	23,656	0	0	4,090	4,540	3,250	3,791	26,270	6,379	3,505	2,113	7,700	4,123	1,280	1,714	1,775	2,288	11,978	18,181	31,222	53,199	860	1,734	100	192	146,125	121,910
2010	55,785	21,280	0	0	4,335	4,319	3,440	3,593	27,640	4,965	3,725	1,899	8,170	3,656	1,270	1,636	1,930	2,181	12,678	17,532	32,997	51,505	910	1,683	105	188	152,985	114,437
2011	57,275	18,828	0	0	4,595	4,085	3,505	3,383	29,180	3,477	3,960	1,672	8,675	3,161	1,270	1,558	1,980	2,064	13,537	16,832	34,893	49,701	965	1,628	110	183	159,945	106,572
2012	58,615	16,277	0	0	4,875	3,837	3,720	3,138	31,030	1,814	4,235	1,395	9,335	2,554	1,285	1,469	2,135	1,926	14,331	16,089	36,909	47,766	1,015	1,578	115	178	167,600	98,021
2013	60,455	13,733	0	0	5,165	3,574	3,795	2,877	305	16	4,610	1,098	10,385	1,900	1,850	1,379	2,410	1,776	15,079	15,302	38,676	45,709	1,065	1,526	135	172	143,930	89,062
2014	57,985	11,296	0	0	5,475	3,303	5,075	2,655	0	0	4,325	822	8,700	1,299	1,920	1,266	3,585	1,643	15,337	14,463	42,618	43,612	1,120	1,472	140	165	146,280	81,996
2015	53,775	8,886	0	0	5,805	3,015	4,635	2,371	0	0	4,015	573	1,305	791	1,990	1,151	3,055	1,447	16,709	13,609	43,716	41,350	1,180	1,413	145	158	136,330	74,764
2016	46,215	6,669	0	0	6,150	2,710	4,665	2,107	0	0	1,955	339	1,240	723	2,165	1,032	2,930	1,277	17,666	12,685	45,934	38,997	1,240	1,351	155	151	130,315	68,041
2017	38,145	4,651	0	0	6,520	2,388	4,750	1,841	0	0	685	228	1,220	657	2,275	902	2,760	1,113	18,708	11,711	48,367	36,544	1,305	1,286	160	143	124,895	61,464
2018	25,435	3,009	0	0	6,910	2,045	4,995	1,569	0	0	725	193	1,295	593	2,395	765	2,940	959	19,798	10,677	50,987	33,980	1,375	1,217	170	135	117,025	55,142
2019	16,975	1,804	0	0	7,325	1,682	5,265	1,282	0	0	765	157	1,370	526	2,505	621	3,130	795	21,029	9,579	53,716	31,265	1,450	1,144	180	127	113,710	48,982
2020	17,405	956	0	0	7,765	1,298	5,540	980	0	0	810	117	1,460	451	2,630	471	3,340	620	22,259	8,412	56,726	28,371	1,525	1,066	185	118	119,645	42,860
2021	8,595	320	0	0	8,230	890	5,890	663	0	0	215	76	1,070	374	2,750	313	3,825	433	23,777	7,213	60,453	25,337	1,610	984	195	108	116,610	36,711
2022	1,885	61	0	0	8,725	458	6,165	339	0	0	230	64	1,130	316	2,945	162	4,055	223	25,214	5,936	63,891	22,165	1,695	897	205	99	116,140	30,720
2023	85	8	0	0	0	0	0	0	0	0	424	51	2,110	253	0	0	0	0	20,990	4,574	71,596	18,817	1,785	806	215	88	97,205	24,597
2024	35	4	0	0	0	0	0	0	0	0	440	26	2,184	129	0	0	0	0	22,214	3,449	68,598	14,997	1,880	710	230	78	95,581	19,393
2025	35	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,256	2,205	53,998	11,309	1,985	609	240	66	74,514	14,190
2026	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,052	1,197	48,137	8,527	2,090	502	250	54	58,529	10,280
2027	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,912	791	45,978	6,110	2,200	390	265	42	54,355	7,333
2028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,981	503	36,849	3,818	2,320	272	275	28	44,425	4,621
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,259	257	38,821	1,948	2,450	140	290	15	46,820	2,360
Total	1,582,400	2,387,246	244,995	246,522	139,165	283,872	107,610	203,529	418,462	565,442	75,449	117,802	158,190	230,770	46,205	83,527	60,405	104,892	467,753	620,432	1,308,386	1,635,860	33,600	44,462	4,660	4,628	4,647,280	6,528,984

[a] Principal and interest schedule adjusted to reflect early redemption of bonds.

Chapter 15

SWP Education and Information



California Water Project sign for the Tehachapi crossing (1971)

Significant Events

- Preparing for the El Niño winter, the Office of Water Education expanded its flood emergency response capability during 1997, by training more than 30 temporary public information officers for flood emergencies.

- In late 1997, OWE teamed with the Governor's Office of Emergency Services to Sponsor and publicize a series of *El Niño Preparedness Regional Briefings* at locations throughout California.

- During the flood season of 1997, OWE helped flood managers conduct frequent news briefings and provided OWE staff for media liaison at the State-Federal Flood Operations Center. OWE's Graphic Services Branch provided photo and videotape documentation of flood incidents.

- OWE's 1997 work products won six awards for excellence at the annual State Information Officers Council competition.

- In July 1997, OWE provided commemorative brochures and programs for the Coastal Branch completion ceremony and showcased *Pipeline,* a video tracing origins and construction of the pipeline that links the SWP with San Luis Obispo and Santa Barbara counties.

- OWE provided special media outreach to help publicize the July 1997 reopening of Silverwood Lake for recreation upon completion of a seismic safety project at the lake.

The Department of Water Resources' Office of Water Education conducts public information and education programs to inform the news media and educate the public about the value and operations of the State Water Project. These programs use an array of public outreach methods, including news media relations, publications, videos, Internet web sites, SWP visitor centers and tours, brochures, exhibits, and special events.

SWP Information and Education Programs

Media Outreach

Flood Emergency. Flood-related news outreach and emergency response preparedness were top priorities for the Office of Water Education during calendar year 1997.

In 1997, OWE provided special training for flood emergency public information officers, giving instruction on emergency response and media training to more than 30 emergency public information officers.

During the winter flood season of 1997, OWE public information officers staffed the State-Federal Flood Center, assisting flood managers with media liaison. Media center briefings provided a key function of channeling news media to one place for comprehensive daily updates from Flood Center experts.

OWE developed and issued a television public-service announcement on how to fill sandbags and effectively use them to provide flood protection at home. Produced in both English and Spanish, the PSAs were prepared by the Graphic Services Branch and distributed to 45 television stations statewide. A longer video on the same topic was sent to water districts for local use.

Other Activities. In other media activities during calendar year 1997, the Department issued news releases on many topics relating to the SWP, project operations, California Aqueduct repairs, and water supply; provided numerous media advisories, interviews and faxes; developed news releases with other water agencies; and assisted the CALFED Bay-Delta Program with its public outreach effort. Key news releases included a February announcement that the SWP would make 100 percent of requested deliveries during 1997 and a series of news releases documenting temporary repairs of a leak and slipout along the California Aqueduct.

To help Department officials deal effectively with news reporters, OWE continued its 1-day training sessions entitled, *Working With the News Media*. Taught by a professional trainer with experience as a government information official and television news director, the workshop gives Department officials expert, practical guidance on routine and emergency communications with the news media.

Internet Web Site

The Department's Central Internet web site, the DWR California Water Page (http://www.dwr.water.ca.gov), continued to evolve and attract users. Online since January 1995, the Department Internet web site completed its third full year of operations. Usage spiked during critical flood periods. In October 1997, the web site was reorganized to present more subjects on the main page, allowing users to find information more quickly.

Publications

DWR People. The Department's employee newsletter continued as a quarterly publication during 1997. Stories feature employees, their accomplishments, skills, news, awards, and retirements. This year's

issues reported on a variety of timely topics, including California's flood fights, Department power generation, and SWP operations.

DWR Update. An employees-only online newsletter, *DWR Update*, provides news accounts on Department changes and events, employee assignments and accomplishments, statewide water issues, and various announcements. Information is added and revised weekly or as news develops.

DWR News. This news magazine is published twice yearly, in the spring and fall. It features in-depth reporting of Departmental programs and projects, as well as significant statewide water issues. Subjects featured during calendar year 1997 included: lessons learned during the 1997 floods, Delta subsidence, water transfers, and studies of salmon DNA.

Brochures. The Department routinely publishes an array of brochures describing SWP facilities. During 1997, OWE revised and reprinted five brochures on these SWP-related topics: *Quail Lake, Upper Feather River Lakes, Safety Along the State Water Project, Lake Perris,* and *Skinner Fish Facility.*

In addition, the Department prepared new brochures on *Staying Safe on the California Aqueduct with Albert and Einstein* and on the State Water Project's visitors centers. The *Staying Safe on the California Aqueduct* brochure uses the Department's water mascot cartoon characters, Albert and Einstein, to teach children water safety. The SWP's visitors center brochure, entitled *California's Water*, promotes visits to the three visitors centers, as well as Edmonston Pumping Plant and Banks Pumping Plant.

Public Surveys. To evaluate brochure needs, OWE conducts periodic surveys of brochure use at departmental visitors centers and other facilities. The 1997 survey of publications showed that more than 100,000 SWP brochures were distributed at the visitors centers. The most popular brochures were: *California's State Water Project, Edmonston Pumping Plant, Oroville-Thermalito Complex, and State Water Project Recreation Facilities.*

Video Projects

Flood Footage. During the 1997 floods, Graphic Services Branch provided photographic and videotaped documentation of flood events.

Coastal Branch. Graphic Services Branch produced a 3-minute film, entitled *Pipeline*, for use at the July 18, 1997, dedication ceremonies celebrating completion of the Coastal Branch of the California Aqueduct.

Delta Program. Graphic Services Branch produced a videotape, entitled *The Delta Dilemma*, to summarize CALFED's efforts to improve Delta water quality, water supply reliability, and ecosystems.

Water Safety Education

High recreational use of SWP facilities reinforces the importance of water safety for such users.

During 1997, an intensive effort by five field divisions to encourage water safety in their communities resulted in more than 16,500 people attending water safety presentations.

Visitors Center Program

During calendar year 1997, staff at the visitors centers welcomed 407,220 visitors and provided information on the SWP and its operations. In addition to meeting visitors' needs, staff also performed community outreach to promote water safety and participated in community events. Oroville Field Division staff helped host the annual July 4 free fireworks celebration at Oroville Dam and took part in the annual Salmon Festival.

In April and May, San Luis Field Division staff took part in the Merced County Spring Fair in Los Banos. During late May and early June, Delta Field Division staff participated in the Apricot Fiesta at Patterson and hosted a June 7 fishing clinic and free fishing day at Bethany Reservoir. Staff activities at other special events during May 1997 are listed under Water Awareness Month Activities.

Table 15-1 shows the number of visitor-days in the different field divisions.

Table 15-1
Visitor-Days Recorded in 1997, by Location

Field Division	*Visitor-Days*
Oroville	136,784
Delta	878
San Luis	134,638
San Joaquin	4,702
Southern	130,218
Total	**407,220**

SWP Visits and Tours

During calendar year 1997, the Department welcomed 60 delegations with 786 individuals from 25 nations.

SWP visitors came from the following countries: Albania, Canada, China, Ecuador, Egypt, Hungary, India, Israel, Japan, Jordan, Kenya, Korea, Lesotho, Mexico, Morocco, Oman, Pakistan, Palestine National Authority, Panama, Portugal, Thailand, Tunisia, Turkey, Uruguay, and Yemen.

Displays and Exhibits

OWE participated as an exhibitor at two Association of California Water Agencies Conferences to promote SWP awareness. An exhibit on the SWP, drawing attention to service areas of the State Water Contractors and the vital water conveyance function of the SWP, was featured at the annual League of California Cities conference. OWE exhibits featuring SWP recreation opportunities were presented at the International Sportsmen's Exposition at Cal Expo in January and at the Fred Hall International Boat Show in Long Beach in March.

OWE's design unit created and installed a James Beckwourth exhibit at the Oroville Visitors Center.

School Education Program

The Department continues its support of its School Education Program, which began in 1991. The program's goal is to provide students and educators with a statewide perspective on water issues, such as conservation, conveyance systems, and the water cycle. This is accomplished by developing and promoting high quality materials provided at no charge to schools, educators, and water districts.

Key program achievements for the period October 1996 through December 31,1997, included:

- The new *Environmental Education Compendium for Water Resources* was published in October 1996. The compendium references current water curricula that were reviewed and rated by teams of teachers. The compendium was sponsored by the Department, a grant from the Department of Education, and contributions from several local water districts.
- The first two of four videos for children were issued in June 1997. The first two are designed for grades K-3 and 4-6. The water cycle video is a lively, entertaining program showing the four phases of the water cycle. Junior scientists demonstrate three experiments designed for children. The 4-6 grade version features a segment on the water cycle in California and a detailed look at water treatment.
- The *Feather River Fish Hatchery Teachers Guide, Some Things Fishy,* was produced in September 1997. The guide contains lessons for 4-6 grade teachers to use with students before and after a visit to the hatchery. Lessons cover salmon and steelhead life cycles, fish anatomy, migration patterns, fish genetics, and the role hatcheries play in sustaining fish populations.
- During fall 1997, the Department sponsored an All About Water Workshop at the California Science Teachers' Association Conference in Palm Springs, and the Department's Childrens Exhibit was shown at the Association of California Water Agencies' Conference in Long Beach. Three additional replicas were made of the *Water Burger* for use in the Department's field divisions and district offices.

Water Awareness Month Activities

During 1997, the Department, for the 10th year, celebrated May as Water Awareness Month in California. The Department sponsored and participated in a series of special events in observance of Water Awareness Month. Events included:

- May 8, *Hooked On Fishing* event at Edmonston Pumping Plant. About 150 grade school students from Bakersfield schools were special guests.
- May 9, grand opening of the Aquatic Center at North Thermalito Forebay, Oroville. Ceremonies opened a new $100,000 aquatic center to help improve sailing at North Thermalito Forebay.
- May 10, open house at Oroville Dam. Free public tours were provided at Hyatt Powerplant at Oroville Dam. Oroville Field Division sponsored this event, timed to coincide with Feather Fiesta Days, a major Oroville community festival.
- May 17, Fishing Derby at O'Neill Forebay, co-sponsored by San Luis Field Division, the Department of Parks and Recreation, and the Four Rivers Natural History Association.
- May 17, California Aqueduct Biking Event. More than 100 bicyclists enjoyed this special ride along a 28-mile portion of the California Aqueduct in Antelope Valley in Southern California. Southern Field Division sponsored this event jointly with the Antelope Valley Trails, Recreation and Environmental Council, and the Grapevine Mountain Bike Association.

Information in this chapter was contributed by the Office of Water Education.

Appendix B
Data and Computations Used to
Determine 1999 Water Charges

Appendix B

Data and Computations

Used to

Determine 1999 Water Charges

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Appendix B

Data and Computations

Used to

Determine 1999 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 1999. The information is based on established data about the SWP, both known and projected, as of June 30, 1998.

The computational procedures and interrelationships between tabulations in this appendix are outlined in Figure B-1 and Figure B-2. All tables referenced in Figures B-1 and B-2 follow this text.

Types of Water Charges

Charges to SWP water supply contractors include the costs of facilities for the conservation and development of a water supply and the conveyance of such supply to SWP service areas. These facilities are classified as "Project Conservation Facilities" and "Project Transportation Facilities" in the Standard Provisions for Water Supply Contract. The names of the main facilities in each classification follow.

Project Conservation Facilities

- Frenchman Dam and Lake
- Grizzly Valley Dam and Lake Davis
- Antelope Dam and Lake
- Oroville Dam and Lake Oroville
- Oroville power facilities
- Delta Facilities
- A portion of the California Aqueduct from the Delta to Dos Amigos Pumping Plant
- Sisk Dam, San Luis Reservoir, and Gianelli Pumping-Generating Plant

Project Transportation Facilities

- Grizzly Valley Pipeline
- North Bay Aqueduct
- South Bay Aqueduct, including Del Valle Dam and Lake Del Valle
- Remainder of the California Aqueduct from the Delta to Dos Amigos Pumping Plant and all facilities south, including dams and lakes in Southern California
- Off-Aqueduct Power Facilities (Reid Gardner Unit No. 4, Bottle Rock Powerplant, and South Geysers Powerplant)

The standard provisions provide for a Delta Water Charge and a Transportation Charge for Project water.

The Delta Water Charge is a unit charge applied to each acre-foot of SWP water the contractors are entitled to receive according to their contracts. The unit charge, if applied to each acre-foot of all such entitlements for the remainder of the Project repayment period, is calculated to result in repayment of all out-

Figure B-1
Relationships of Data Used to Substantiate Statements of Charges

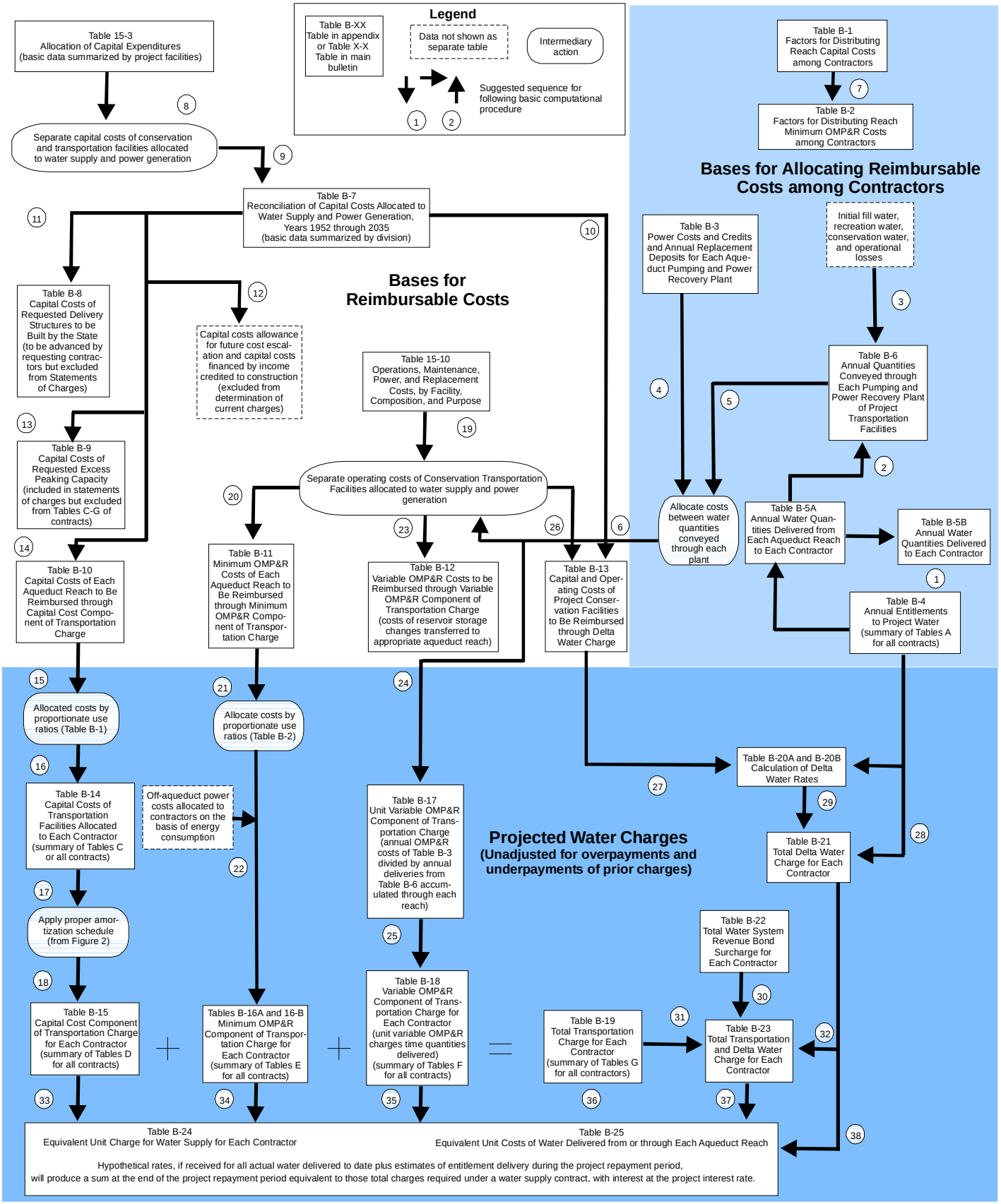
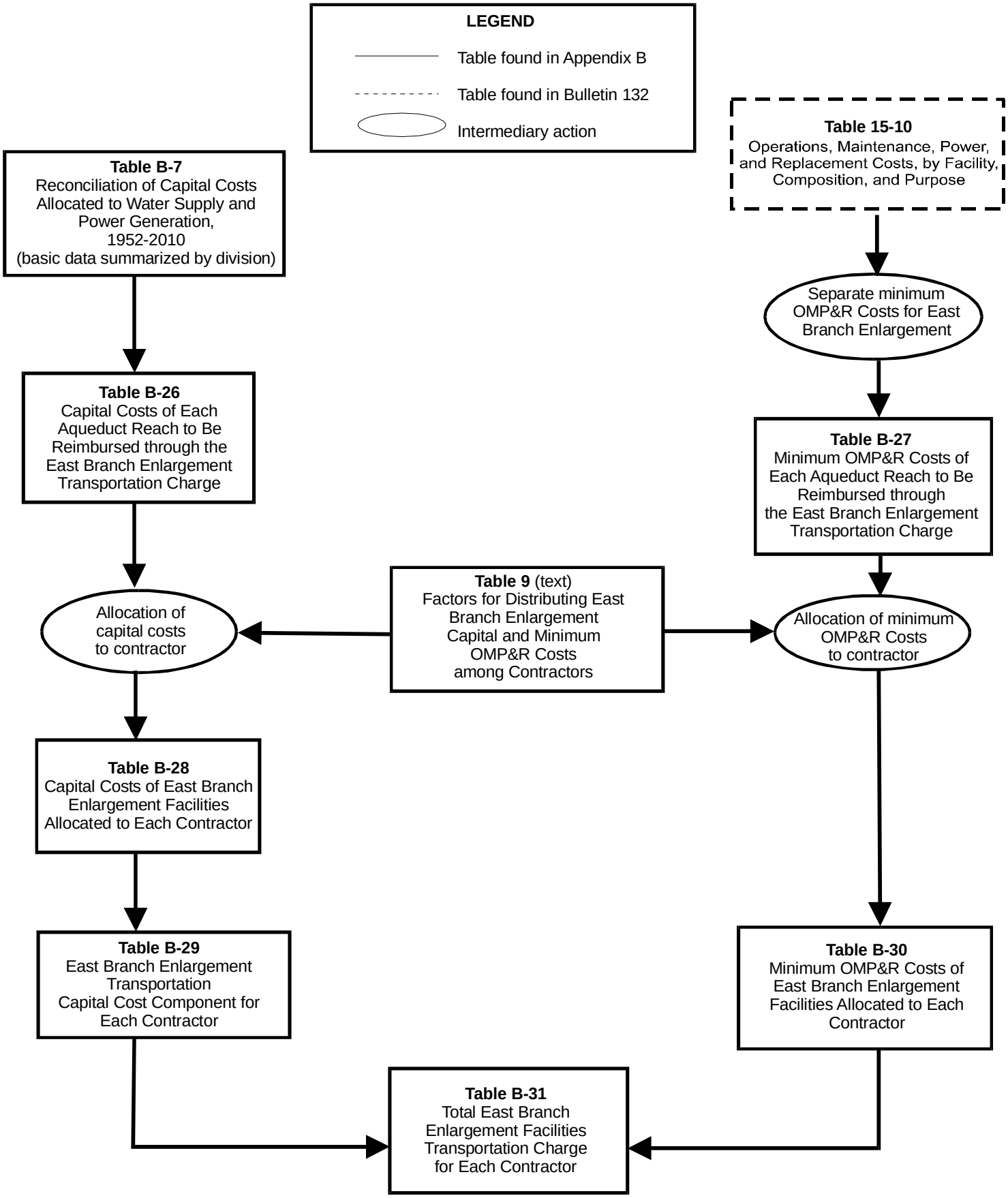


Figure B-2
Relationships of Data Used to Substantiate East Branch Enlargement Charges



standing 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 1999.

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 1998 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.

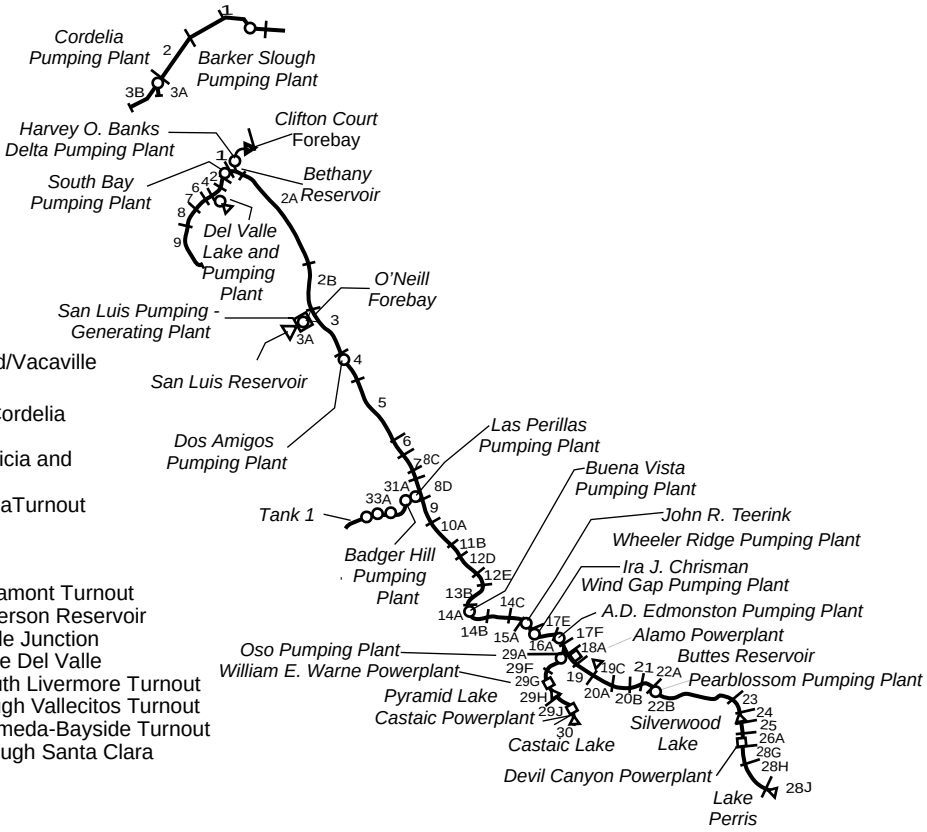
Allocations of reimbursable capital costs and minimum OMP&R costs of each reach are based on the proportionate maximum use of that reach by respective contractors under planned conditions of full development.

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.

Table B-1 presents the reach ratios currently applicable to reimbursable capital costs.

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 NapaTurnout 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 John R. Teerink Wheeler Ridge Pumping Plant
15A John R. Teerink Wheeler Ridge Pumping Plant to Ira J. Chrisman Wind Gap Pumping Plant
16A Ira J. Chrisman Wind Gap Pumping Plant to A. D. Edmonston Pumping Plant

Tehachapi Division

17E A. D. Edmonston Pumping Plant to Carley V. Porter Tunnel
17F Carley V. Porter Tunnel to Junction, West Branch, California Aqueduct

California Aqueduct (continued)

Mojave Division

18A Junction, West Branch, California Aqueduct through Alamo Powerplant
19 Alamo Powerplant to Fairmont
19C Buttes Junction through Buttes Reservoir
20A Fairmont through 70th Street West
20B 70th Street West to Palmdale
21 Palmdale to Littlerock Creek
22A Littlerock Creek to Pearblossom Pumping Plant
22B Pearblossom Pumping Plant to West Fork Mojave River
23 West Fork Mojave River to Silverwood Lake
24 Cedar Springs Dam and Silverwood Lake

Santa Ana Division

25 Silverwood Lake to South Portal, San Bernardino Tunnel
26A South Portal, San Bernardino Tunnel through Devil Canyon Powerplant
28G Devil Canyon Powerplant to Barton Road
28H Barton Road to Lake Perris
28J Perris Dam and Lake Perris

West Branch, California Aqueduct

29A Junction, West Branch, California Aqueduct through Oso Pumping Plant
29F Oso Pumping Plant through Quail Embankment
29G Quail Embankment through William E. Warne Powerplant
29H Pyramid Dam and Lake
29J Pyramid Lake through Castaic Powerplant
30 Castaic Dam and Lake

Coastal Branch, California Aqueduct

31A Avenal Gap to Devil's Den Pumping Plant
33A Devil's Den Pumping Plant through Tank 1

Table B-2 presents corresponding ratios for allocating 1999 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 1998 through 2035 are based on contractors' requests for future water deliveries. The quantities included in Table B-5A also include non-Project 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 non-Project 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 pro-

cess 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, 1997; 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 The Metropolitan Water District of Southern California, San Gabriel Valley Municipal Water District, and Antelope Valley-East Kern Water Agency as follows:

1. Additional costs incurred by the State for requested excess capacity;

2. Advances by water contractors of funds for such costs; and

3. Credits for advances in excess of costs, which were applied to respective contractors' installments of the capital cost component of the Transportation Charge in 1981.

Under Amendment 2 of MWD's contract, 809 cfs of excess capacity was originally constructed in reaches of the West Branch at MWD's request. That capacity was reclassified as basic capacity of SWP Transportation Facilities under Amendment 7. MWD paid $16.3 million as a prepayment of the capital cost component of the Transportation Charge in lieu of advancing funds for the original requested capacity.

Amendment 5 to MWD's contract requires that additional costs for modifications to the Santa Ana Pipeline (required for enlargement of Lake Perris) will be allocated to MWD and returned to the State through payments of the Transportation Charge. The additional costs to be repaid through MWD's capital cost component for the aqueduct reach from Devil Canyon Powerplant to Barton Road total about $6.7 million (see Bulletin 132-72, page 98).

Table B-10 presents the actual and projected annual capital costs of each aqueduct reach that will eventually be returned to the State, with interest, through contractors' payments of the capital cost component of the Transportation Charge and payment of debt service under the Devil Canyon-Castaic contracts.

Annual Operating Costs

Annual operating costs allocable to water supply and power generation are returned to the State through the minimum and variable OMP&R components of Delta Water and Transportation Charges and through a portion of the revenues from energy sales. All reimbursable operating costs of Conservation Facilities are included in the minimum OMP&R component of the Delta Water Charge.

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

Table 1
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
Delta Pumping Plant to termini (excluding Coastal Branch)	94.3	96.9	5.7	3.1
Coastal Branch	100.0	100.0	0.0	0.0

a) Percentages indicated are applicable to the remaining costs of division after excluding costs allocated to flood control that are reimbursed by the federal government (22 percent of capital costs) and excluding specific power costs of Edward Hyatt and Thermalito powerplants and switchyards.
b) Percentage indicated consists of 48.8 percent of costs allocated to recreation and 26.8 percent to flood control.
c) Percentage indicated consists of 44.9 percent of costs allocated to recreation and 33.1 percent to flood control.

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 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 3 percent per year for 1998, 1999, and 2000.

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 for 1999. Solano County Water Agency, Empire West Side Irrigation District, and Castaic Lake Water Agency also prepaid capital costs (see Table B-14 footnotes). Table B-14

includes the costs of the planned East Branch Extension to provide water service to San Bernardino Valley Municipal Water District and San Gorgonio Pass Water Agency.

Both Table B-14 and Table C of the six contracts for Project water service below Devil Canyon Powerplant and Castaic Powerplant include the capital costs reimbursable under the Devil Canyon-Castaic contract.

Table B-15 summarizes capital cost components of the Transportation Charge for each contractor for each year of the Project repayment period. By the year 2035, the capital cost components shown in Table B-15 will recover the costs shown in Table B-14, with interest at the Project Interest Rate of 4.615 percent per annum and based on the amortization schedules included in Table 2.

Those estimated components, subsequently adjusted for prior overpayments or underpayments, are included in Table D of the water supply contracts. Costs of excess capacity are billed separately and are not included in Table B-15.

Table B-15 includes the debt service payments due from the six contractors down-aqueduct from Devil Canyon Powerplant and Castaic Powerplant according to terms of the Devil Canyon-Castaic contract.

Table B-16A summarizes the minimum OMP&R components of the Transportation Charge for each year of the Project repayment period. Those estimated components, subsequently adjusted for prior overpayments or underpayments, are included in Table E of the respective contracts.

The total amounts included in Table B-16A are determined by applying the proportionate-use ratios in Table B-2 to the reach costs in Table B-11. Table B-16A excludes charges for Off-Aqueduct Power Facilities, which are included separately in Table B-16B. Both Table B-16A and Table E for the six contractors down-aqueduct from Devil Canyon Powerplant and Castaic Powerplant include the portion of operating costs payable under the Devil Canyon-Castaic contract.

Prior to 1997, as part of operating agreements with the Department, Kern County Water Agency was billed for any additional operating costs caused by early installation of units in Las Perillas and Badger Hill Pumping Plants by Berrenda Mesa Water Storage District (see Bulletin 132-71, page 7). Under those agreements, a portion of minimum OMP&R costs of Reach 31A were assigned directly to KCWA,

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	
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	
The Metropolitan Water District of Southern California	1963	
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.

with the remaining reach costs allocated by application of the proportionate-use ratios shown in Table 3. The Department purchased Units 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	*46,510*
1970	*46,302*
1971	*140,072*
1972	*95,016*
1973	*72,452*
1974	*100,688*
1975	*127,456*
1976	*138,500*
1977	*120,749*
1978	*157,650*
1979	*121,220*
1980	*150,718*
1981	*74,695*
1982	*82,967*
1983	*90,037*
1984	*106,992*
1985	*159,302*
1986	*137,094*
1987	*126,304*
1988	*131,347*
1989	*129,059*
1990	*138,153*
1991	*143,893*
1992	*184,692*
1993	*220,175*
1994	*363,788*
1995	*271,996*
1996	*320,452*
Total	***3,998,279***

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 1997.

Table 4
Summary of Off-Aqueduct Power Facility Charges and Credits

1997 Charges	
Reid Gardner Powerplant	$68,167,810
Bottle Rock Powerplant	$15,451,693
South Geysers Powerplant	$7,010,910
Subtotal	*$90,630,413*
1997 Credits	
Power sales	$9,705,455
Miscellaneous water	
Alameda County, Zone 7	$11,973
Subtotal	*$9,717,428*
Grand Total	**$80,912,985**

Table 5 shows projected charges for Off-Aqueduct Power Facilities and an amount equal to 25 percent of annual bond service for 1998 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.

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 5
Projected Charges for Off-Aqueduct Power Facilities

Year	Total Annual Cost	25% Bond Service
1998	98,511,231	9,552,793
1999	95,725,425	9,521,261
2000	95,353,833	9,462,936
2001	94,981,914	9,462,552
2002	94,954,602	9,467,090
2003	83,001,139	7,086,397
2004	83,037,896	7,093,749
2005	91,418,296	8,769,829
2006	91,472,146	8,780,599
2007	91,458,146	8,777,799
2008	110,254,723	12,537,114
2009	110,181,922	12,522,554
2010	110,108,155	12,513,800
2011	110,093,858	12,530,941
2012	110,391,196	12,590,409
2013	50,456,342	4,578,375
2014	19,067,471	3,786,495
2015	8,489,471	1,670,895
2016	5,320,720	1,064,144
2017	3,488,345	697,669
2018	3,507,971	701,595
2019	3,520,033	704,007
2020	3,549,533	709,907
2021	2,170,158	434,032
2022	2,175,564	435,113
2023	3,549,003	709,801
2024	3,474,424	694,885

Table 6
Kilowatt-Hour Per Acre-Foot Factors for Allocating Off-Aqueduct Power Facility Costs

Pumping Plant	kWh per acre-foot (a At Plant	kWh per acre-foot (a 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

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 Powerplant and Castaic Powerplant include amounts of debt service and operating cost payments due according to provisions of the Devil Canyon-Castaic contract.

Delta Water Charges

Table B-20A presents the calculation of the Delta Water Rate for the initial Conservation Facilities applicable in 1999 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 three contractors who have not executed the Monterey Amendment (Plumas County, Empire, and Ventura).

Table B-20B shows each component of the 1999 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 S. 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 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:

1. A reallocation of costs of constructing the present East Branch facilities between Alamo Powerplant and Silverwood Lake;

2. A reallocation of costs of Silverwood Lake to reflect additional use as a result of East Branch Enlargement operation;

3. Reallocation of costs of San Bernardino Tunnel to reflect redistribution of flow capacities necessary for the East Branch Enlargement Facilities; and

4. 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 (in 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	0	0	4,203	86,753	38,412	3,171	5,289	4,518	9,861	33,092	10,551	0	195,850
1994	0	487	541	1,059	17,348	6,176	546	1,572	470	1,081	3,714	665	175	33,834
1995	0	0	0	568	22,452	10,371	2,269	5,338	6,166	13,250	45,663	14,337	0	120,414
1996	5	0	2	731	15,357	6,304	227	2,110	2,572	5,571	19,272	6,050	0	58,201
1997	0	1,022	1,457	1,148	85,639	39,725	368	6,406	3,372	5,130	9,984	0	0	154,251
Total	**3,258**	**2,501**	**3,756**	**13,170**	**463,001**	**366,358**	**73,925**	**48,183**	**33,532**	**62,388**	**183,729**	**31,603**	**175**	**1,291,414**

Table 8
Extra Peaking Charges for Additional Power, by Contractor (in Dollars)

Year	Napa	Solano	Alameda Zone 7	ACWD (a	SCVWD (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	SGVMWD (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	0	5,740	0	0	0	3,621	47,078	3,344	0	66,546	0	2,491	23,663	38,983	0	4,384	0	195,850
1994	0	1,028	4,372	0	0	0	373	20,920	0	25	0	0	2,632	1,669	2,734	81	0	0	33,834
1995	0	0	779	0	0	11,579	0	10,691	2,351	0	0	0	2,178	0	90,142	2,694	0	0	120,414
1996	7	0	77	2,493	0	113	312	3,550	3,442	0	8,801	0	227	12,618	20,619	0	3,132	2,810	58,201
1997	0	5,002	1,515	5,330	0	11,349	0	114,530	0	12	0	0	0			0	16,513	0	154,251
Total	**4,539**	**7,592**	**13,916**	**10,413**	**3,523**	**38,877**	**6,293**	**736,343**	**11,468**	**1,363**	**88,224**	**123,044**	**16,793**	**37,950**	**152,478**	**4,875**	**30,491**	**3,232**	**1,291,414**

a) Alameda County Water Agency
b) Santa Clara Valley Water District
c) Antelope Valley East Kern Water Agency
d) Littlerock Creek Irrigation District
e) San Gabriel Valley Municipal Water District

Table 9
Determination of Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities Among Participating Contractors

Reach Number	*Description*
18A	Junction, West Branch, California Aqueduct, through Alamo Powerplant
19	Alamo Powerplant to Fairmont
20A	Fairmont through 70th Street West
20B	70th Street West to Palmdale
21	Palmdale to Littlerock Creek
22A	Littlerock Creek to Pearblossom Pumping Plant
22B	Pearblossom Pumping Plant to West Fork Mojave River
23B	West Fork Mojave River to Silverwood Lake (excluding Mojave Siphon Powerplant facilities)
23C	Mojave Siphon Powerplant facilities
24	Cedar Springs Dam and Silverwood Lake
25	Silverwood Lake to South Portal, San Bernardino Tunnel
26A	South Portal, San Bernardino Tunnel through Devil Canyon Powerplant
26B	Devil Canyon Powerplant Bypass

Share of Englargement 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 WA	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Future Contractor	
	North Bay Aqueduct							
1	Barker Slough thru Fairfield/Vacaville Turnout	0.29667896	0.70332104					1.00000000
2	Fairfield/Vacaville Turnout to Cordelia Forebay	0.38414552	0.61585448					1.00000000
3A	Cordelia Forebay thru Benicia and Vallejo Turnouts		1.00000000					1.00000000
3B	Cordelia Forebay thru Napa Turnout Reservoir	1.00000000						1.00000000
	South Bay Aqueduct							
1	Bethany Reservoir thru Altamont Turnout			0.22599612	0.20663021	0.49237700	0.07499667	1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.22599658	0.20663059	0.49237783	0.07499500	1.00000000
4	Patterson Reservoir to Del Valle Junction			0.19504795	0.21450017	0.51113249	0.07931939	1.00000000
5	Del Valle Junction thru Lake Del Valle			0.14436367	0.12972254	0.33715573	0.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.14599918	0.21144710	0.50574745	0.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				0.25176680	0.60218448	0.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.27934645	0.72065355		1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
	California Aqueduct							
1	Delta thru Bethany Reservoir			0.00954762	0.00872940	0.02080173	0.00342512	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	0.00533025	0.00983363	0.02938771	0.01285707	0.00528268	0.00133599	0.00871214
2A	Bethany Reservoir to Orestimba Creek	0.00557228	0.01028016	0.03072206	0.01343077	0.00552019	0.00139607	0.00910385
2B	Orestimba Creek to O'Neill Forebay	0.00557840	0.01029147	0.03075590	0.01345227	0.00552783	0.00139800	0.00911645
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557734	0.01028951	0.03075009	0.01345170	0.00552723	0.00139784	0.00911549
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557622	0.01028745	0.03074397	0.01345109	0.00552661	0.00139770	0.00911448
5	Panoche Creek to Five Points	0.00557482	0.01028490	0.03073634	0.01345034	0.00552584	0.00139749	0.00911321
6	Five Points to Arroyo Pasajero	0.00557272	0.01028102	0.03072478	0.01344921	0.00552468	0.00139719	0.00911128
7	Arroyo Pasajero to Kettleman City	0.00557204	0.01027978	0.03072106	0.01344885	0.00552431	0.00139709	0.00911066
8C	Kettleman City thru Milham Avenue	0.00557118	0.01027820	0.03071639	0.01344839	0.00552383	0.00139698	0.00910988
8D	Milham Avenue thru Avenal Gap	0.00568627	0.01049050	0.03135092	0.01373231	0.00563936	0.00142618	0.00930040
9	Avenal Gap thru Twisselman Road			0.03415127	0.01351543	0.00614883	0.00155503	0.01014061
10A	Twisselman Road thru Lost Hills			0.03469577	0.01373089	0.00624887	0.00158032	0.01030558
11B	Lost Hills to 7th Standard Road			0.03809270	0.01507515	0.00687096	0.00173764	0.01133149
12D	7th Standard Road thru Elk Hills Road			0.04003300	0.01584295	0.00722715	0.00182772	0.01191890
12E	Elk Hills Road thru Tupman Road			0.04008645	0.01586409	0.00723790	0.00183042	0.01193663
13B	Tupman Road to Buena Vista Pumping Plant			0.04346587	0.01720142	0.00785624	0.00198678	0.01295638
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04562672	0.01805651	0.00825378	0.00208731	0.01361198
14B	Santiago Creek thru Old River Road			0.04644648	0.01838089	0.00840577	0.00212574	0.01386265
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04785067	0.01893656	0.00866541	0.00219140	0.01429083
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04864152	0.01924948	0.00881208	0.00222850	0.01453274
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.05045251	0.01996611	0.00914681	0.00231317	0.01508479
17E	Edmonston Pumping Plant to Porter Tunnel			0.05280653	0.02089760	0.00958290	0.00242346	0.01580397
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05291784	0.02094165	0.00960322	0.00242859	0.01583747
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13238112		0.02399391	0.00606795	0.03957043
19	Alamo Powerplant to Fairmont			0.13237766		0.02399451	0.00606811	0.03957141
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06847931		0.02576425	0.00651573	0.04249001
20B	70th Street West to Palmdale			0.02276024		0.02702917	0.00683555	0.04457607
21	Palmdale to Littlerock Creek			0.02318952		0.02754716	0.00696651	0.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01181870		0.02794143	0.00706621	0.04608043
22B	Pearblossom Pumping Plant to West Fork Mojave River					0.02827552	0.00715074	0.04663153
23	West Fork Mojave River to Silverwood Lake					0.00324449	0.00818122	0.00535117
24	Cedar Springs Dam and Silverwood Lake					0.01024605	0.01251569	0.01690478
25	Silverwood Lake to South Portal San Bernardino Tunnel							
26A	South Portal, San Bernardino Tunnel thru Devil Canyon Pwp.							
28G	Devil Canyon Powerplant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch, Calif. Aqueduct thru Oso P. P.				0.03544337			
29F	Oso Pumping Plant thru Quail Embankment				0.03544339			
29G	Quail Embankment thru Warne Powerplant				0.03544339			
29H	Pyramid Dam and Lake				0.02817144			
29J	Pyramid Lake thru Castaic Powerplant				0.03544338			
30	Castaic Dam and Lake				0.02927284			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560301	0.19482503		0.07364766			
33A	Devil's Den Pumping Plant thru San Luis Obispo Powerplant	0.35150791	0.64849209					
34	San Luis Obispo Powerplant to Arroyo Grande	0.24688802	0.75311198					
35	Arroyo Grande thru Santa Maria Terminus	0.18022521	0.81977479					

Table B-1

Factors for Distributing Reach Capital Costs Among Contractors

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	0.01707833	0.00088682	0.00254699	0.02741678	0.29913759	0.00090698	0.00167129	0.03505104
2A	0.01781099	0.00092486	0.00266265	0.02864172	0.31198180	0.00094750	0.00174295	0.03655469
2B	0.01785906	0.00092735	0.00266557	0.02868654	0.31281652	0.00094899		0.03665341
3	0.01786406	0.00092760	0.00266506	0.02868502	0.31290175	0.00094895		0.03666366
4	0.01786931	0.00092788	0.00266454	0.02868340	0.31299134	0.00094889		0.03667444
5	0.01787586	0.00092822	0.00266387	0.02868140	0.31310323	0.00094882		0.03668791
6	0.01788577	0.00092874	0.00266286	0.02867835	0.31327253	0.00094871		0.03670826
7	0.01788895	0.00092891	0.00266253	0.02867737	0.31332681	0.00094867		0.03671479
8C	0.01789297	0.00092913	0.00266212	0.02867614	0.31339533	0.00094862		0.03672304
8D	0.01828852		0.00271710	0.02928060	0.32031663			0.01820929
9				0.03194493	0.32369508			
10A				0.03247127	0.31285407			
11B				0.03573786	0.24527887			
12D				0.03761105	0.20665553			
12E				0.03767057	0.20556447			
13B				0.01447880	0.16479038			
14A				0.00615449	0.13216944			
14B				0.00626956	0.11649662			
14C				0.00646581	0.08966572			
15A				0.00657688	0.07454474			
16A				0.00682984	0.03994337			
17E				0.00210582				
31A			0.05046240		0.48227699			

Reach No.	Southern California Area (continued)								
	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	Total
1	0.00049172	0.01822700	0.00369095	0.02362624	0.00650285	0.00398352	0.43924688	0.00429168	1.00000000
2A	0.00051406	0.01903846	0.00385853	0.02468859	0.00679627	0.00416263	0.45916237	0.00448655	1.00000000
2B	0.00051462	0.01907016	0.00386278	0.02472270	0.00680498	0.00416838	0.45968714	0.00449148	1.00000000
3	0.00051453	0.01906971	0.00386205	0.02472005	0.00680406	0.00416794	0.45960574	0.00449062	1.00000000
4	0.00051444	0.01906925	0.00386128	0.02471726	0.00680308	0.00416746	0.45952018	0.00448973	1.00000000
5	0.00051432	0.01906866	0.00386031	0.02471378	0.00680186	0.00416688	0.45941333	0.00448861	1.00000000
6	0.00051412	0.01906776	0.00385887	0.02470854	0.00680003	0.00416600	0.45925166	0.00448692	1.00000000
7	0.00051405	0.01906749	0.00385840	0.02470686	0.00679943	0.00416573	0.45919983	0.00448639	1.00000000
8C	0.00051398	0.01906712	0.00385782	0.02470474	0.00679868	0.00416536	0.45913440	0.00448570	1.00000000
8D	0.00052459	0.01947080	0.00393753	0.02522139	0.00694026	0.00425248	0.46863651	0.00457836	1.00000000
9	0.00057144	0.01873281	0.00428925	0.02749974	0.00756471	0.00463662	0.51056696	0.00498729	1.00000000
10A	0.00058056	0.01903043	0.00435765	0.02794708	0.00768690	0.00471203	0.51873178	0.00506680	1.00000000
11B	0.00063742	0.02088830	0.00478432	0.03072891	0.00844757	0.00518104	0.56964494	0.00556283	1.00000000
12D	0.00066989	0.02194906	0.00502802	0.03232170	0.00888274	0.00544959	0.59873654	0.00584616	1.00000000
12E	0.00067080	0.02197778	0.00503473	0.03236972	0.00889547	0.00545770	0.59954932	0.00585395	1.00000000
13B	0.00072736	0.02382634	0.00545919	0.03513484	0.00965181	0.00592390	0.65019325	0.00634744	1.00000000
14A	0.00076353	0.02500720	0.00573062	0.03691253	0.01013713	0.00622360	0.68260220	0.00666296	1.00000000
14B	0.00077724	0.02545460	0.00583358	0.03759214	0.01032218	0.00633819	0.69491170	0.00678266	1.00000000
14C	0.00080074	0.02622128	0.00600995	0.03875315	0.01063861	0.00653395	0.71598822	0.00698770	1.00000000
15A	0.00081397	0.02665284	0.00610931	0.03940906	0.01081716	0.00664451	0.72786403	0.00710318	1.00000000
16A	0.00084428	0.02764172	0.00633677	0.04090590	0.01122514	0.00689687	0.75504510	0.00736762	1.00000000
17E	0.00088367	0.02892656	0.00663243	0.04285589	0.01175623	0.00722565	0.79038795	0.00771134	1.00000000
17F	0.00088553	0.02898748	0.00664642	0.04294673	0.01178110	0.00724096	0.79205542	0.00772759	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		0.09318491							1.00000000
33A									1.00000000
34									1.00000000
35									1.00000000

Table B-2

Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

Reach No.	Reach Description	North Bay Area		South Bay Area				Total
		Napa County FC&WCD	Solano County WA	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Future Contractor	
	North Bay Aqueduct							
1	Barker Slough thru Fairfield/Vacaville Turnout	0.27960541	0.72039459					1.00000000
2	Fairfield/Vacaville Turnout to Cordelia Forebay	0.38414552	0.61585448					1.00000000
3A	Cordelia Forebay thru Benicia and Vallejo Turnouts		1.00000000					1.00000000
3B	Cordelia Forebay thru Napa Turnout Reservoir	1.00000000						1.00000000
	South Bay Aqueduct							
1	Bethany Reservoir thru Altamont Turnout			0.22599612	0.20663021	0.49237700	0.07499667	1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.22599658	0.20663059	0.49237783	0.07499500	1.00000000
4	Patterson Reservoir to Del Valle Junction			0.19504795	0.21450017	0.51113249	0.07931939	1.00000000
5	Del Valle Junction thru Lake Del Valle			0.14436367	0.12972254	0.33715573	0.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.14599918	0.21144710	0.50574745	0.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				0.25176680	0.60218448	0.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.27934645	0.72065355		1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
	California Aqueduct							
1	Delta thru Bethany Reservoir			0.00954762	0.00872940	0.02080173	0.00342512	N/A

Reach No.	Reach Description	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	0.00533025	0.00983363	0.02938771	0.01285707	0.00528268	0.00133599	0.00871214
2A	Bethany Reservoir to Orestimba Creek	0.00557228	0.01028016	0.03072206	0.01343077	0.00552019	0.00139607	0.00910385
2B	Orestimba Creek to O'Neill Forebay	0.00557840	0.01029147	0.03075590	0.01345227	0.00552783	0.00139800	0.00911645
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557734	0.01028951	0.03075009	0.01345170	0.00552723	0.00139784	0.00911549
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557622	0.01028745	0.03074397	0.01345109	0.00552661	0.00139770	0.00911448
5	Panoche Creek to Five Points	0.00557482	0.01028490	0.03073634	0.01345034	0.00552584	0.00139749	0.00911321
6	Five Points to Arroyo Pasajero	0.00557272	0.01028102	0.03072478	0.01344921	0.00552468	0.00139719	0.00911128
7	Arroyo Pasajero to Kettleman City	0.00557204	0.01027978	0.03072106	0.01344885	0.00552431	0.00139709	0.00911066
8C	Kettleman City thru Milham Avenue	0.00551611	0.01017659	0.03041259	0.01329876	0.00546533	0.00138219	0.00901342
8D	Milham Avenue thru Avenal Gap	0.00562839	0.01038372	0.03103165	0.01357506	0.00557788	0.00141064	0.00919903
9	Avenal Gap thru Twisselman Road			0.03376087	0.01336097	0.00607364	0.00153602	0.01001662
10A	Twisselman Road thru Lost Hills			0.03428911	0.01357000	0.00617053	0.00156051	0.01017639
11B	Lost Hills to 7th Standard Road			0.03757825	0.01487161	0.00677183	0.00171257	0.01116803
12D	7th Standard Road thru Elk Hills Road			0.03944924	0.01561199	0.00711465	0.00179927	0.01173338
12E	Elk Hills Road thru Tupman Road			0.03949952	0.01563187	0.00712476	0.00180181	0.01175005
13B	Tupman Road to Buena Vista Pumping Plant			0.04275368	0.01691964	0.00771893	0.00195206	0.01272995
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04482259	0.01773837	0.00809871	0.00204810	0.01335626
14B	Santiago Creek thru Old River Road			0.04560328	0.01804729	0.00824312	0.00208462	0.01359443
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04693919	0.01857594	0.00848956	0.00214694	0.01400085
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04768950	0.01887282	0.00862838	0.00218205	0.01422981
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.04940588	0.01955202	0.00894485	0.00226210	0.01475175
17E	Edmonston Pumping Plant to Porter Tunnel			0.05162888	0.02043167	0.00935560	0.00236598	0.01542914
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05173489	0.02047362	0.00937489	0.00237086	0.01546095
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13238112		0.02399391	0.00606795	0.03957043
19	Alamo Powerplant to Fairmont			0.13237766		0.02399451	0.00606811	0.03957141
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06847931		0.02576425	0.00651573	0.04249001
20B	70th Street West to Palmdale			0.02276024		0.02702917	0.00683555	0.04457607
21	Palmdale to Littlerock Creek			0.02318952		0.02754716	0.00696651	0.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01181870		0.02794143	0.00706621	0.04608043
22B	Pearblossom Pumping Plant to West Fork Mojave River					0.02827552	0.00715074	0.04663153
23	West Fork Mojave River to Silverwood Lake					0.00324449	0.00818122	0.00535117
24	Cedar Springs Dam and Silverwood Lake					0.01024605	0.01251569	0.01690478
25	Silverwood Lake to South Portal San Bernardino Tunnel							
26A	South Portal, San Bernardino Tunnel thru Devil Canyon Pwp.							
28G	Devil Canyon Powerplant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch, Calif. Aqueduct thru Oso P. P.			0.00302472	0.03533617			
29F	Oso Pumping Plant thru Quail Embankment			0.00302551	0.03533615			
29G	Quail Embankment thru Warne Powerplant				0.03544339			
29H	Pyramid Dam and Lake				0.02817144			
29J	Pyramid Lake thru Castaic Powerplant				0.03544338			
30	Castaic Dam and Lake				0.02927284			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560301	0.19482503		0.07364766			
33A	Devil's Den Pumping Plant thru San Luis Obispo Powerplant	0.35150791	0.64849209					
34	San Luis Obispo Powerplant to Arroyo Grande	0.24688802	0.75311198					
35	Arroyo Grande thru Santa Maria Terminus	0.18022521	0.81977479					

Table B-2

Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

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	0.01707833	0.00088682	0.00254699	0.02741678	0.29913759	0.00090698	0.00167129	0.03505104
2A	0.01781099	0.00092486	0.00266265	0.02864172	0.31198180	0.00094750	0.00174295	0.03655469
2B	0.01785906	0.00092735	0.00266557	0.02868654	0.31281652	0.00094899		0.03665341
3	0.01786406	0.00092760	0.00266506	0.02868502	0.31290175	0.00094895		0.03666366
4	0.01786931	0.00092788	0.00266454	0.02868340	0.31299134	0.00094889		0.03667444
5	0.01787586	0.00092822	0.00266387	0.02868140	0.31310323	0.00094882		0.03668791
6	0.01788577	0.00092874	0.00266286	0.02867835	0.31327253	0.00094871		0.03670826
7	0.01788895	0.00092891	0.00266253	0.02867737	0.31332681	0.00094867		0.03671479
8C	0.01764545	0.00091627	0.00263582	0.02835964	0.30907838	0.00093815		0.03621497
8D	0.01802840		0.00268946	0.02894798	0.31577975			0.01795029
9				0.03153806	0.31855629			
10A				0.03204731	0.30776618			
11B				0.03520131	0.24071732			
12D				0.03700207	0.20252379			
12E				0.03705801	0.20143621			
13B				0.01421576	0.16110675			
14A				0.00603436	0.12900327			
14B				0.00614355	0.11362601			
14C				0.00632956	0.08735395			
15A				0.00643453	0.07257285			
16A				0.00667333	0.03882784			
17E				0.00205401				
31A			0.05046240		0.48227699			

Reach No.	Southern California Area (continued)								
	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	Total
1	0.00049172	0.01822700	0.00369095	0.02362624	0.00650285	0.00398352	0.43924688	0.00429168	1.00000000
2A	0.00051406	0.01903846	0.00385853	0.02468859	0.00679627	0.00416263	0.45916237	0.00448655	1.00000000
2B	0.00051462	0.01907016	0.00386278	0.02472270	0.00680498	0.00416838	0.45968714	0.00449148	1.00000000
3	0.00051453	0.01906971	0.00386205	0.02472005	0.00680406	0.00416794	0.45960574	0.00449062	1.00000000
4	0.00051444	0.01906925	0.00386128	0.02471726	0.00680308	0.00416746	0.45952018	0.00448973	1.00000000
5	0.00051432	0.01906866	0.00386031	0.02471378	0.00680186	0.00416688	0.45941333	0.00448861	1.00000000
6	0.00051412	0.01906776	0.00385887	0.02470854	0.00680003	0.00416600	0.45925166	0.00448692	1.00000000
7	0.00051405	0.01906749	0.00385840	0.02470686	0.00679943	0.00416573	0.45919983	0.00448639	1.00000000
8C	0.00050889	0.01885191	0.00381966	0.02444325	0.00672840	0.00412127	0.46603161	0.00444134	1.00000000
8D	0.00051924	0.01924463	0.00389742	0.02494657	0.00686640	0.00420615	0.47558559	0.00453175	1.00000000
9	0.00056490	0.01852122	0.00424020	0.02716362	0.00747438	0.00457995	0.51768297	0.00493029	1.00000000
10A	0.00057375	0.01881003	0.00430657	0.02759689	0.00759280	0.00465299	0.52587951	0.00500743	1.00000000
11B	0.00062880	0.02060950	0.00471970	0.03028579	0.00832850	0.00510633	0.57681273	0.00548773	1.00000000
12D	0.00066012	0.02163270	0.00495468	0.03181880	0.00874762	0.00536480	0.60582596	0.00576093	1.00000000
12E	0.00066098	0.02165972	0.00496099	0.03186394	0.00875959	0.00537242	0.60665187	0.00576826	1.00000000
13B	0.00071543	0.02344041	0.00536972	0.03452105	0.00948692	0.00582042	0.65700581	0.00624347	1.00000000
14A	0.00075007	0.02457147	0.00562959	0.03621932	0.00995092	0.00610673	0.68912468	0.00654556	1.00000000
14B	0.00076312	0.02499771	0.00572764	0.03686506	0.01012689	0.00621561	0.70130211	0.00665956	1.00000000
14C	0.00078548	0.02572741	0.00589544	0.03796707	0.01042748	0.00640142	0.72210508	0.00685463	1.00000000
15A	0.00079804	0.02613702	0.00598970	0.03858787	0.01059661	0.00650607	0.73381056	0.00696419	1.00000000
16A	0.00082675	0.02707465	0.00620528	0.04000308	0.01098268	0.00674466	0.76053031	0.00721482	1.00000000
17E	0.00086395	0.02828854	0.00648449	0.04183978	0.01148336	0.00705434	0.79518085	0.00753941	1.00000000
17F	0.00086573	0.02834658	0.00649780	0.04192605	0.01150701	0.00706889	0.79681784	0.00755489	1.00000000
18A	0.00221525	0.04960424	0.01662680	0.10730448	0.02944860	0.01809192	0.57469530		1.00000000
19	0.00221522	0.04960300	0.01662640	0.10730707	0.02944876	0.01809230	0.57469556		1.00000000
19C									1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161798	0.01942666	0.61700971		1.00000000
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316986	0.02038045	0.64729087		1.00000000
21	0.00254199	0.05692053		0.12319480	0.03380324	0.02077093	0.65963498		1.00000000
22A		0.05773082		0.12495766	0.03428605	0.02106816	0.66905054		1.00000000
22B		0.05842136		0.12645207	0.03469614	0.02132008	0.67705256		1.00000000
23				0.14467451	0.03969010	0.02439237	0.77446614		1.00000000
24				0.22243002	0.04339444	0.02843498	0.66607404		1.00000000
25				0.11825184	0.03722720	0.01993915	0.82458181		1.00000000
26A				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
28G				0.05126137			0.94873863		1.00000000
28H							1.00000000		1.00000000
28J							1.00000000		1.00000000
29A							0.94859988	0.01303923	1.00000000
29F							0.94859915	0.01303919	1.00000000
29G							0.95147785	0.01307876	1.00000000
29H							0.96278381	0.00904475	1.00000000
29J							0.95147787	0.01307875	1.00000000
30							0.96212388	0.00860328	1.00000000
31A		0.09318491							1.00000000
33A									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	38,130	0	0	0	0	0	0
1963	0	0	0	58,871	0	0	0	0	0	0
1964	0	0	0	75,239	0	0	0	0	0	0
1965	0	0	0	146,297	0	0	0	0	0	0
1966	0	0	0	198,643	0	0	0	0	0	0
1967	0	0	0	229,629	26,982	0	0	0	0	0
1968	0	0	7,128	342,761	1,324,777	239,505	0	0	0	0
1969	0	0	8,557	279,751	855,304	143,403	0	0	0	0
1970	0	0	13,666	448,383	368,508	217,820	2,940	0	0	0
1971	0	0	10,626	422,057	597,946	229,306	156,540	23,021	18,577	29,067
1972	0	0	14,430	623,564	1,110,833	575,291	348,668	187,825	385,935	1,263,087
1973	0	0	14,453	485,534	918,234	493,776	511,904	514,487	883,725	3,139,297
1974	0	0	17,508	510,873	997,269	560,461	556,968	595,585	1,048,196	3,700,573
1975	0	0	14,801	382,106	1,353,916	561,089	650,781	707,038	1,394,918	4,853,538
1976	0	0	20,867	589,007	916,728	596,426	701,061	687,677	1,414,902	4,917,776
1977	0	0	22,640	541,803	653,304	191,906	170,689	173,496	337,890	1,130,422
1978	0	0	21,670	568,381	3,871,011	723,989	1,009,556	968,744	1,782,668	6,281,786
1979	0	0	16,240	622,517	3,431,278	1,019,021	848,639	830,839	1,666,505	5,741,609
1980	0	0	19,936	523,445	2,267,876	1,097,085	1,007,198	997,877	2,018,282	6,671,880
1981	0	0	23,859	630,690	2,554,123	1,983,053	1,394,808	1,393,914	2,984,141	9,845,033
1982	0	0	12,080	485,211	3,720,329	1,468,311	1,347,987	1,400,673	2,792,878	9,805,123
1983	0	0	2,333	118,004	1,364,599	409,477	431,081	421,646	752,007	2,286,714
1984	0	0	4,855	282,393	1,826,038	945,543	801,724	748,515	1,397,133	4,355,934
1985	0	0	10,211	454,902	3,256,633	1,695,467	1,562,163	1,597,229	3,215,408	10,780,874
1986	0	0	15,455	845,695	7,523,377	2,712,317	2,571,445	2,630,655	5,432,149	18,458,787
1987	0	0	27,222	912,826	5,022,970	2,592,742	2,300,161	2,334,816	4,586,669	15,101,192
1988	18,182	37,933	23,971	933,931	5,938,756	2,685,740	2,650,700	2,686,627	5,305,996	17,517,279
1989	25,914	94,282	6,642	1,113,020	11,272,467	4,116,269	4,087,554	4,163,097	8,685,628	29,014,968
1990	59,003	138,545	43,041	1,891,646	9,708,228	4,740,462	5,988,071	6,327,816	14,187,441	50,014,099
1991	11,309	22,083	2,861	412,091	2,989,839	649,856	1,189,853	1,362,077	3,156,762	11,307,842
1992	14,611	26,554	9,469	314,436	3,042,708	1,220,093	1,302,589	1,374,810	2,725,797	9,036,479
1993	(12,159)	(18,383)	(5,364)	(161,703)	507,577	335,401	(74,653)	(52,727)	(512,278)	(2,279,355)
1994	53,899	78,016	28,924	817,386	4,932,694	2,521,423	2,636,596	2,700,092	5,646,310	19,341,861
1995	20,181	36,608	11,570	250,148	4,274,635	1,549,893	957,150	902,926	1,763,760	5,918,610
1996	57,529	83,521	23,215	632,197	8,583,415	3,965,218	2,541,961	2,368,747	4,998,027	17,528,293
1997	60,311	44,465	19,420	903,306	6,287,741	2,593,944	2,449,164	2,298,720	5,104,879	18,392,248
1998	101,752	71,780	73,069	1,028,033	11,325,198	4,484,789	4,362,235	4,793,614	10,074,798	35,245,267
1999	147,192	107,017	108,177	2,705,489	16,837,621	7,166,410	7,961,869	8,928,501	18,897,166	66,473,830
2000	161,194	114,963	122,013	2,920,024	20,438,944	7,949,459	9,048,109	10,206,015	21,619,906	76,114,411
2001	124,891	93,432	106,720	2,405,326	16,612,585	6,404,787	7,226,370	8,125,534	17,205,995	60,556,299
2002	128,090	95,389	112,156	2,429,912	17,578,466	6,526,796	7,395,629	8,324,341	17,632,340	62,068,768
2003	161,770	110,738	118,364	2,558,942	18,754,284	7,164,425	8,447,421	9,610,447	20,404,039	71,932,264
2004	189,419	130,444	141,064	2,928,528	19,414,251	8,015,718	9,341,345	10,600,840	22,489,341	79,245,036
2005	155,153	105,377	118,484	2,365,759	18,354,355	6,792,090	8,119,827	9,263,169	19,683,103	69,427,658
2006	154,358	103,815	120,023	2,330,688	16,133,946	6,682,000	7,999,216	9,125,552	19,390,779	68,396,565
2007	162,585	107,741	129,694	2,418,843	18,391,826	7,034,412	8,496,660	9,708,440	20,639,231	72,822,580
2008	170,522	111,605	138,773	2,505,575	21,314,826	7,482,319	9,149,592	10,481,151	22,299,236	78,718,449
2009	164,352	106,234	136,456	2,385,004	16,441,942	6,923,690	8,356,018	9,546,020	20,292,857	71,597,963
2010	175,348	112,014	148,693	2,514,776	20,233,648	7,560,253	9,273,087	10,629,353	22,618,729	79,855,893
2011	178,374	112,279	154,698	2,520,705	19,280,564	7,635,493	9,397,119	10,778,984	22,942,106	81,008,293
2012	182,906	113,799	161,744	2,554,836	20,434,385	7,804,125	9,639,449	11,065,313	23,556,787	83,190,937
2013	197,670	121,250	178,507	2,722,117	21,378,996	8,398,714	10,420,110	11,972,152	25,494,389	90,048,791
2014	222,006	134,328	204,930	3,015,732	23,788,565	9,392,666	11,700,013	13,453,687	28,656,197	101,232,713
2015	226,522	135,203	213,368	3,035,366	23,827,845	9,541,198	11,932,519	13,731,931	29,255,909	103,366,912
2016	229,418	135,296	220,290	3,037,449	24,573,186	9,546,153	11,937,301	13,737,188	29,266,913	103,405,445
2017	233,850	136,347	228,943	3,061,053	23,857,062	9,768,342	12,294,100	14,165,960	30,192,101	106,700,226
2018	237,693	136,992	237,411	3,075,532	25,591,074	9,838,616	12,394,280	14,284,255	30,445,943	107,601,362
2019	240,417	137,006	244,973	3,075,858	24,909,921	9,887,954	12,481,759	14,390,756	30,676,824	108,425,652
2020	238,711	134,502	248,079	3,019,643	24,005,637	9,824,109	12,462,146	14,382,101	30,667,077	108,411,341
2021	238,356	134,034	248,425	3,009,120	23,647,331	9,733,035	12,318,540	14,209,758	30,295,512	107,088,093
2022	241,651	135,887	251,859	3,050,718	26,381,763	9,924,985	12,589,668	14,529,176	30,980,791	109,520,148
2023	241,031	135,538	251,213	3,042,892	25,414,157	9,927,437	12,606,372	14,551,662	31,030,753	109,701,435
2024	238,902	134,341	248,994	3,016,014	24,287,515	9,721,160	12,285,308	14,167,403	30,202,562	106,753,987
2025	241,441	135,769	251,641	3,048,076	25,189,490	10,003,390	12,734,188	14,706,256	31,364,739	110,892,016
2026	237,401	133,497	247,430	2,997,075	23,019,348	9,655,752	12,200,201	14,068,724	29,991,886	106,008,498
2027	238,541	134,138	248,618	3,011,463	24,800,613	9,811,485	12,452,802	14,372,934	30,648,563	108,347,858
2028	237,691	133,660	247,732	3,000,729	25,932,519	9,760,434	12,379,826	14,286,876	30,463,922	107,692,577
2029	237,207	133,388	247,228	2,994,622	25,023,897	9,750,757	12,372,466	14,279,505	30,448,893	107,641,294
2030	234,164	131,676	244,056	2,956,199	24,117,944	9,563,213	12,103,067	13,961,313	29,765,827	105,216,175
2031	236,307	132,883	246,290	2,983,262	25,485,992	9,757,699	12,403,993	14,321,109	30,540,859	107,973,646
2032	232,736	130,873	242,567	2,938,172	22,402,626	9,455,901	11,942,588	13,770,467	29,355,291	103,756,623
2033	236,389	132,928	246,375	2,984,296	25,423,202	9,772,046	12,427,042	14,348,805	30,600,764	108,187,199
2034	233,988	131,577	243,872	2,953,978	23,488,197	9,577,741	12,132,988	13,998,354	29,846,464	105,504,890
2035	235,136	132,223	245,069	2,968,469	24,881,030	9,626,157	12,194,899	14,069,977	29,999,254	106,045,042
Total	8,053,914	5,213,587	7,840,284	123,493,445	934,474,846	370,699,997	445,083,420	505,293,845	1,073,112,151	3,780,331,152

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 Recover 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 Powerplant (11)	Pearblossom Pumping Plant (12)	Mojave Siphon Powerplant (13)	Devil Canyon Powerplant (14)	Oso Pumping Plant (15)	Warne Powerplant (16)	Castaic Powerplant (17)	Las Perillas and Badger Hill Pumping Plants (18)	Devil's Den, Bluestone,and Polonio Pass Pumping Plants (19)	
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	38,130
1963	0	0	0	0	0	0	0	0	0	58,871
1964	0	0	0	0	0	0	0	0	0	75,239
1965	0	0	0	0	0	0	0	0	0	146,297
1966	0	0	0	0	0	0	0	0	0	198,643
1967	0	0	0	0	0	0	0	6,517	0	263,128
1968	0	0	0	0	0	0	0	120,278	0	2,034,449
1969	0	0	0	0	0	0	0	79,620	0	1,366,635
1970	0	0	0	0	0	0	0	137,449	0	1,188,766
1971	0	64,807	0	0	1,696	0	0	171,389	0	1,725,032
1972	0	103,584	0	(3,112)	180,005	0	(385,696)	240,651	0	4,645,065
1973	0	615,309	0	(931,697)	274,450	0	(1,193,216)	128,730	0	5,854,986
1974	0	595,646	0	(939,072)	322,440	0	(1,823,397)	129,345	0	6,272,395
1975	0	616,327	0	(1,101,445)	457,487	0	(2,835,302)	101,109	0	7,156,363
1976	0	914,440	0	(1,520,412)	314,669	0	(2,512,021)	151,211	0	7,192,331
1977	0	318,880	0	(1,216,060)	53,119	0	(1,701,284)	85,538	0	762,343
1978	0	1,801,373	0	(3,298,247)	251,373	0	(2,361,377)	197,217	0	11,818,144
1979	0	1,813,744	0	(3,335,069)	157,934	0	(2,749,296)	209,088	0	10,273,049
1980	0	1,866,161	0	(3,508,195)	170,688	0	(2,721,871)	182,996	0	10,593,358
1981	0	2,186,799	0	(3,772,498)	514,832	0	(3,248,819)	186,954	0	16,676,889
1982	0	1,697,479	0	(3,149,543)	625,495	(973,898)	(3,476,126)	182,305	0	15,938,304
1983	0	378,067	0	(5,764,122)	235,207	(1,373,756)	(4,125,351)	18,756	0	(4,845,338)
1984	0	663,794	0	(7,751,311)	437,445	(2,269,583)	1,643,951	115,960	0	3,202,391
1985	0	1,237,894	0	(10,518,533)	1,045,721	(8,489,604)	(19,880,260)	154,637	0	(13,877,258)
1986	(1,064,432)	2,603,839	0	(12,055,463)	1,387,170	(6,276,296)	(11,466,466)	317,915	0	13,636,147
1987	(1,032,312)	1,915,507	0	(10,781,802)	1,390,350	(6,703,320)	(11,630,565)	270,779	0	6,307,235
1988	(773,793)	2,486,441	0	(14,655,710)	1,508,266	(7,384,227)	(12,676,489)	235,312	0	6,538,915
1989	(772,111)	4,311,069	0	(18,944,080)	2,146,718	(8,713,183)	(14,657,167)	311,568	0	26,262,655
1990	(845,641)	6,789,828	0	(21,336,948)	3,032,622	(11,692,826)	(19,863,014)	463,756	0	49,646,129
1991	(323,332)	1,227,025	0	(5,404,572)	724,224	(4,735,955)	(8,097,080)	(63,212)	0	4,431,671
1992	(974,167)	1,211,265	0	(9,773,109)	749,944	(5,540,626)	(9,312,434)	71,898	0	(4,499,683)
1993	(60,506)	(282,894)	0	(7,861,479)	128,757	(4,988,529)	(10,262,109)	(57,631)	0	(25,658,035)
1994	(64,321)	2,613,969	0	(12,005,935)	1,307,075	(6,185,852)	(10,727,203)	224,649	0	13,919,583
1995	(1,275,628)	1,021,084	0	(10,169,650)	300,610	(2,790,060)	(6,843,875)	119,130	0	(3,952,908)
1996	(2,965,278)	2,760,245	(992,438)	(12,174,720)	900,319	(4,251,241)	(8,459,336)	306,390	0	15,906,064
1997	(2,572,502)	2,920,867	(1,747,733)	(13,831,793)	829,157	(4,810,595)	(8,742,937)	270,162	194,742	10,663,566
1998	(3,638,400)	5,841,115	(4,646,400)	(19,615,000)	1,721,512	(7,430,000)	(12,787,500)	431,641	720,816	32,158,319
1999	(5,116,800)	12,272,960	(7,022,400)	(29,812,500)	2,820,023	(8,772,500)	(15,045,000)	738,152	1,776,792	81,171,999
2000	(5,635,200)	14,198,277	(7,537,200)	(32,167,500)	3,196,709	(9,257,500)	(15,865,000)	779,301	1,893,348	98,300,273
2001	(5,434,560)	11,968,797	(6,427,476)	(31,305,550)	2,216,130	(8,164,425)	(12,362,550)	649,291	1,597,551	71,599,147
2002	(4,938,960)	10,999,635	(6,006,330)	(28,784,950)	2,767,166	(10,110,600)	(15,417,300)	656,676	1,615,653	73,072,877
2003	(4,774,272)	10,671,048	(5,483,346)	(26,427,425)	4,093,797	(14,460,800)	(22,554,050)	766,148	2,332,041	83,425,835
2004	(4,530,672)	11,479,052	(5,110,314)	(26,239,350)	4,580,443	(14,181,125)	(22,024,300)	876,802	2,668,854	100,015,376
2005	(4,917,600)	10,037,287	(5,679,366)	(27,048,125)	4,044,160	(15,302,675)	(24,072,250)	695,129	2,155,986	74,297,521
2006	(4,931,616)	9,982,833	(5,787,738)	(27,190,800)	3,929,901	(15,172,600)	(23,753,600)	667,210	2,124,024	70,304,556
2007	(5,035,680)	10,525,670	(5,711,244)	(28,150,875)	4,220,503	(15,638,775)	(24,585,100)	672,455	2,204,364	78,413,330
2008	(5,259,840)	11,416,305	(5,963,364)	(28,652,700)	4,551,278	(16,313,025)	(25,602,150)	696,567	2,283,405	89,528,524
2009	(5,040,528)	10,365,627	(5,576,802)	(28,203,875)	4,103,676	(15,514,025)	(24,261,850)	663,047	2,173,524	74,659,330
2010	(5,339,760)	11,575,958	(6,242,082)	(28,684,550)	4,583,625	(16,374,625)	(25,689,150)	699,125	2,291,790	89,942,125
2011	(5,408,736)	11,749,729	(6,027,450)	(29,646,625)	4,632,211	(16,533,900)	(25,904,800)	700,773	2,297,193	89,867,010
2012	(5,514,480)	12,132,200	(6,308,742)	(29,291,950)	4,715,721	(16,606,300)	(26,015,900)	710,261	2,328,297	94,853,388
2013	(5,475,792)	12,954,015	(6,219,708)	(29,861,675)	5,160,439	(17,043,800)	(26,719,550)	756,767	2,480,745	106,964,137
2014	(5,635,536)	14,610,954	(6,511,890)	(30,016,925)	5,763,873	(17,210,475)	(26,942,250)	838,393	2,748,324	129,445,305
2015	(5,831,952)	15,122,200	(6,619,272)	(30,461,300)	5,810,040	(17,249,950)	(26,982,850)	843,852	2,766,219	132,663,760
2016	(5,659,296)	14,788,802	(6,300,756)	(30,624,100)	5,946,879	(17,606,825)	(27,593,450)	844,431	2,768,118	132,652,442
2017	(5,894,304)	15,516,426	(6,851,658)	(31,082,075)	6,054,921	(17,774,500)	(27,875,500)	850,993	2,789,628	136,371,915
2018	(5,801,568)	15,517,538	(6,737,940)	(31,470,425)	6,160,961	(17,948,125)	(28,223,600)	855,019	2,802,822	138,997,840
2019	(5,869,728)	15,621,864	(6,752,856)	(31,623,500)	6,220,501	(18,110,800)	(28,491,150)	855,109	2,803,119	139,123,679
2020	(6,042,624)	15,853,714	(6,747,180)	(32,201,900)	6,142,279	(18,173,025)	(28,647,800)	839,481	2,751,888	137,168,179
2021	(5,845,296)	15,354,235	(6,456,318)	(31,775,750)	6,181,692	(18,334,375)	(28,931,150)	836,556	2,742,300	134,694,098
2022	(5,943,792)	15,869,113	(6,796,746)	(31,777,150)	6,263,447	(18,328,975)	(28,915,100)	848,119	2,780,208	141,605,770
2023	(6,048,240)	15,938,460	(6,717,216)	(31,965,925)	6,260,344	(18,356,825)	(28,973,750)	845,944	2,773,077	140,658,359
2024	(5,841,840)	15,279,446	(6,290,196)	(32,163,300)	6,168,500	(18,269,975)	(28,806,500)	838,472	2,748,582	134,719,375
2025	(6,113,040)	16,316,645	(6,822,486)	(32,296,200)	6,254,381	(18,312,275)	(28,897,800)	847,386	2,777,802	142,321,419
2026	(5,802,816)	15,143,205	(6,212,910)	(31,798,425)	6,136,617	(18,289,850)	(28,838,300)	833,206	2,731,323	132,461,862
2027	(5,982,864)	15,737,370	(6,701,442)	(32,425,925)	6,183,166	(18,325,275)	(28,915,200)	837,207	2,744,436	137,218,488
2028	(6,005,904)	15,618,209	(6,920,232)	(31,756,925)	6,153,151	(18,310,450)	(28,879,750)	834,223	2,734,653	137,602,941
2029	(6,027,696)	15,579,509	(6,838,260)	(31,845,350)	6,164,011	(18,362,100)	(28,987,300)	832,525	2,729,088	136,373,684
2030	(5,941,104)	15,145,320	(6,632,274)	(31,990,825)	6,050,074	(18,285,100)	(28,825,200)	821,843	2,694,072	131,330,440
2031	(6,060,384)	15,793,903	(6,847,962)	(32,277,450)	6,122,646	(18,319,875)	(28,903,950)	829,367	2,718,735	137,137,070
2032	(5,835,168)	14,862,190	(6,478,098)	(31,783,450)	5,988,719	(18,225,825)	(28,709,500)	816,831	2,677,644	127,541,187
2033	(6,113,136)	15,781,055	(6,818,460)	(31,945,475)	6,153,669	(18,385,500)	(29,037,450)	829,655	2,719,677	137,543,081
2034	(5,966,064)	15,220,470	(6,518,292)	(32,425,250)	6,056,222	(18,305,825)	(28,873,550)	821,225	2,692,047	130,813,032
2035	(6,056,592)	15,645,707	(6,987,948)	(31,948,850)	5,949,133	(17,973,575)	(28,237,350)	825,254	2,705,253	134,318,288
Total	(224,035,863)	562,939,392	(245,050,525)	(1,344,544,502)	214,970,293	(702,515,726)	(1,150,257,240)	34,654,902	93,538,140	4,493,295,512

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 (b (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)
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	12,330	39,170	51,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2000	13,050	39,620	52,670	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2001	13,665	40,080	53,745	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2002	14,185	40,540	54,725	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2003	14,800	41,000	55,800	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2004	15,400	41,450	56,850	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2005	16,000	41,500	57,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2006	16,450	41,550	58,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2007	17,000	41,600	58,600	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2008	17,650	41,650	59,300	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2009	18,200	41,700	59,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2010	18,750	41,750	60,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2011	19,400	41,800	61,200	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2012	19,950	41,850	61,800	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2013	20,600	41,900	62,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2014	21,250	41,950	63,200	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2015	21,900	42,000	63,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2016	22,500	42,000	64,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2017	23,100	42,000	65,100	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2018	23,700	42,000	65,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2019	24,300	42,000	66,300	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2020	24,900	42,000	66,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2021	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2022	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2023	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2024	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2025	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2026	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2027	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2028	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2029	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2030	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2031	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2032	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2033	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2034	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2035	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
Total	878,695	1,848,396	2,727,091	2,494,607	2,459,248	6,510,783	11,464,638	1,189,430	2,218,494	3,407,924

a) Entitlements for the South Bay area were supplied by non-SWP 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-SWP water.

TABLE B-4

Annual Entitlements to Project Water

(Acre-Feet)

Calendar Year	San Joaquin Valley Area								
			Kern County Water Agency						
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Municipal and Industrial (13)	Agricultural (14)	Total (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	14,300	1,000	0	46,600	46,600	900	2,300	12,250	77,350
1969	14,325	3,000	0	95,700	95,700	1,200	2,500	46,350	163,075
1970	15,700	3,000	28,700	116,400	145,100	1,300	2,600	34,300	202,000
1971	17,900	3,000	35,700	154,600	190,300	1,300	2,800	36,500	251,800
1972	20,000	3,000	39,200	231,500	270,700	1,400	5,366	112,600	413,066
1973	22,000	3,000	43,500	267,000	310,500	1,500	3,100	43,552	383,652
1974	33,390	3,000	48,000	299,000	347,000	1,500	3,471	72,289	460,650
1975	40,555	3,000	52,700	358,120	410,820	1,600	3,576	86,258	545,809
1976	30,921	3,000	56,100	386,050	442,150	1,600	4,039	61,707	543,417
1977	30,400	3,000	60,600	423,000	483,600	1,700	3,700	59,000	581,400
1978	32,500	0	64,100	470,200	534,300	1,900	3,900	63,300	635,900
1979	38,544	3,000	67,600	516,300	583,900	2,000	4,000	71,241	702,685
1980	41,000	3,000	71,100	563,400	634,500	2,200	5,700	71,700	758,100
1981	41,000	3,000	74,800	616,600	691,400	2,300	4,300	76,000	818,000
1982	41,000	3,000	79,600	665,700	745,300	2,500	4,500	80,200	876,500
1983	42,900	3,000	83,500	721,600	805,100	2,800	3,770	9,548	867,118
1984	45,100	3,000	103,600	757,000	860,600	3,100	4,800	62,611	979,211
1985	47,200	3,000	108,900	806,100	915,000	3,400	4,900	45,549	1,019,049
1986	49,300	3,000	113,400	820,246	933,646	3,700	5,100	97,200	1,091,946
1987	51,400	3,000	119,100	904,400	1,023,500	4,000	5,200	101,400	1,188,500
1988	53,500	3,000	123,900	950,700	1,074,600	4,000	5,400	105,600	1,246,100
1989	55,600	3,000	128,200	984,100	1,112,300	4,000	5,600	109,900	1,290,400
1990	28,850	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,313,450
1991	53,411	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,338,011
1992	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1993	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1994	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1995	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1996	53,370	3,000	134,600	982,460	1,117,060	4,000	5,700	118,500	1,301,630
1997	53,370	3,000	134,600	978,130	1,112,730	4,000	5,700	118,500	1,297,300
1998	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
1999	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2000	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2001	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2002	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2003	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2004	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2005	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2006	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2007	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2008	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2009	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2010	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2011	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2012	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2013	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2014	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2015	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2016	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2017	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2018	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2019	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2020	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2021	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2022	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2023	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2024	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2025	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2026	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2027	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2028	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2029	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2030	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2031	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2032	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2033	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2034	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2035	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
Total	3,226,396	199,000	7,693,900	55,446,646	63,140,546	233,900	352,822	6,910,055	74,062,719

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	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2001	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2002	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2003	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2004	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2005	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2006	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2007	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2008	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2009	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2010	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2011	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2012	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2013	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2014	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2015	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2016	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2017	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2018	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2019	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2020	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2021	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2022	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2023	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2024	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2025	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2026	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2027	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2028	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2029	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2030	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2031	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2032	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2033	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2034	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2035	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
Total	7,330,000	3,069,098	1,286,111	321,556	2,107,600	127,210	3,760,043	983,720	5,909,177	1,641,322

TABLE B-4

Annual Entitlements to Project Water

(Acre-Feet)

Calendar Year	Southern California Area				Feather River Area					
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)	South Bay Area Future Contractor (38)	Grand Total (39)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	11,538
1968	0	0	0	3,700	0	300	250	550	0	191,500
1969	0	0	0	5,000	0	350	270	620	0	267,395
1970	0	0	0	5,700	0	400	300	700	0	322,600
1971	0	0	0	6,700	0	450	440	890	0	375,590
1972	0	154,772	0	209,423	0	500	470	970	0	741,759
1973	0	354,600	0	481,100	0	600	500	1,100	0	986,252
1974	0	454,900	0	597,920	0	700	530	1,230	0	1,182,200
1975	0	555,200	0	714,950	0	1,050	560	1,610	0	1,386,869
1976	0	655,600	0	836,480	0	1,400	590	1,990	0	1,508,387
1977	0	755,900	0	954,901	0	1,800	620	2,420	0	1,667,321
1978	0	856,300	0	1,049,584	0	1,200	650	1,850	0	1,818,034
1979	0	956,600	0	1,190,573	0	1,450	680	2,130	0	2,028,088
1980	6,800	1,057,000	1,000	1,317,614	0	1,100	710	1,810	0	2,214,770
1981	7,800	1,157,300	2,000	1,432,065	0	1,200	740	1,940	0	2,392,468
1982	8,800	1,257,600	3,000	1,550,449	0	1,200	770	1,970	0	2,574,545
1983	9,800	1,358,000	4,000	1,681,257	0	1,200	800	2,000	0	2,701,164
1984	10,800	1,458,300	5,000	1,744,098	1,600	1,200	830	3,630	0	2,884,337
1985	11,800	1,558,700	6,000	1,864,849	1,700	1,200	860	3,760	0	3,055,846
1986	12,900	1,659,300	8,000	1,983,890	2,100	1,200	890	4,190	0	3,257,736
1987	14,000	1,759,800	10,000	2,103,941	2,500	1,200	920	4,620	0	3,484,115
1988	15,100	1,860,400	13,000	2,225,482	2,900	1,200	960	5,060	0	3,688,335
1989	16,200	1,961,000	16,000	2,424,633	3,300	1,200	1,000	5,500	0	3,958,190
1990	17,300	2,011,500	20,000	2,500,600	3,800	1,200	1,040	6,040	0	4,079,666
1991	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,080	11,880	0	4,126,567
1992	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,120	11,920	0	4,138,816
1993	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,160	11,960	0	4,146,966
1994	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,200	12,000	0	4,154,201
1995	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,250	12,050	0	4,163,066
1996	0	2,011,500	20,000	2,492,900	9,600	1,200	1,300	12,100	0	4,111,341
1997	0	2,011,500	20,000	2,492,900	9,600	1,200	1,350	12,150	0	4,084,866
1998	0	2,011,500	20,000	2,517,900	9,600	1,200	1,400	12,200	0	4,086,021
1999	2,000	2,011,500	20,000	2,519,900	9,600	1,200	1,450	12,250	0	4,114,436
2000	3,000	2,011,500	20,000	2,520,900	9,600	1,200	1,510	12,310	0	4,116,666
2001	4,000	2,011,500	20,000	2,521,900	9,600	27,500	1,570	38,670	0	4,145,101
2002	4,000	2,011,500	20,000	2,521,900	9,600	27,500	1,630	38,730	0	4,146,141
2003	5,000	2,011,500	20,000	2,522,900	9,600	27,500	1,690	38,790	0	4,148,276
2004	6,000	2,011,500	20,000	2,523,900	9,600	27,500	1,750	38,850	0	4,150,386
2005	6,500	2,011,500	20,000	2,524,400	9,600	27,500	1,810	38,910	0	4,151,596
2006	7,000	2,011,500	20,000	2,524,900	9,600	27,500	1,880	38,980	0	4,152,666
2007	7,500	2,011,500	20,000	2,525,400	9,600	27,500	1,950	39,050	0	4,153,836
2008	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,020	39,120	0	4,164,406
2009	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,090	39,190	0	4,165,076
2010	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,160	39,260	0	4,165,746
2011	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,240	39,340	0	4,166,526
2012	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,320	39,420	0	4,167,206
2013	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,410	39,510	0	4,167,996
2014	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,500	39,600	0	4,168,786
2015	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,600	39,700	0	4,169,586
2016	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,170,286
2017	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,170,886
2018	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,171,486
2019	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,086
2020	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,686
2021	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2022	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2023	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2024	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2025	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2026	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2027	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2028	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2029	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2030	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2031	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2032	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2033	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2034	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
2035	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
Total	747,200	112,360,272	988,000	140,631,309	449,900	997,800	112,820	1,560,520	0	233,854,201

TABLE B-5A

Annual Water Quantities Delivered from each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	Grizzly Valley PC Pipeline FC&WCD (1)	North Bay Aqueduct				South Bay Aqueduct				
		Reach 1	Reach3A	Reach 3B		Reach 1		Reach 2	Reach 4	Reach 5
		SCWA (2)	SCWA (3)	NC FC&WCD (a (4)	Total (5)	ACWD (6)	AC FC&WCD (7)	AC FC&WCD (8)	AC FC&WCD (9)	ACWD (10)
1962	0	0	0	0	0	8,412	141	353	0	0
1963	0	0	0	0	0	10,914	814	917	0	0
1964	0	0	0	0	0	19,238	248	1,425	0	0
1965	0	0	0	0	0	15,280	637	1,830	138	0
1966	0	0	0	0	0	0	2,475	2,537	499	0
1967	0	0	0	0	0	0	1,527	2,391	862	0
1968	0	0	0	1,214	1,214	0	1,608	3,799	721	0
1969	0	0	0	2,687	2,687	0	1,165	3,459	1,851	0
1970	70	0	0	3,618	3,618	0	1,345	4,558	3,182	0
1971	64	0	0	2,521	2,521	0	546	1,908	2,403	0
1972	505	0	0	3,647	3,647	0	1,066	4,605	2,041	1,489
1973	679	0	0	3,792	3,792	0	430	1,123	1,193	0
1974	648	0	0	4,870	4,870	0	177	0	975	0
1975	405	0	0	6,840	6,840	0	137	1,783	1,864	0
1976	382	0	0	7,122	7,122	0	265	7,204	3,384	0
1977	303	0	0	8,226	8,226	0	210	4,491	2,213	0
1978	278	0	0	6,034	6,034	0	422	2,426	3,754	0
1979	329	0	0	6,561	6,561	0	197	4,283	5,567	0
1980	295	0	0	6,707	6,707	0	77	3,883	6,686	1,508
1981	355	0	0	9,001	9,001	0	1,250	4,648	5,273	5,752
1982	305	0	0	1,213	1,213	0	473	3,043	4,406	0
1983	262	0	0	2,287	2,287	0	179	2,712	1,714	0
1984	272	0	0	2,923	2,923	0	165	4,219	2,219	0
1985	254	0	0	4,039	4,039	0	213	5,199	2,060	0
1986	317	1,400	0	3,519	4,919	0	200	6,052	2,062	0
1987	452	1,550	0	7,693	9,243	0	218	7,538	2,372	0
1988	523	0	9,725	5,392	15,117	0	222	8,302	4,681	0
1989	486	10	17,246	6,195	23,451	0	222	8,051	6,562	0
1990	548	3,275	15,856	6,940	26,071	0	256	8,160	8,347	0
1991	420	3,117	3,855	1,380	8,352	0	162	3,676	3,269	0
1992	485	5,553	9,220	4,001	18,774	0	217	5,177	2,188	0
1993	444	14,709	14,471	5,286	34,466	0	190	5,843	8,430	1,650
1994	492	10,343	14,913	6,792	32,048	0	132	4,482	5,427	0
1995	308	5,452	15,893	5,182	26,527	0	278	6,236	7,195	0
1996	360	12,842	17,069	4,893	34,804	0	277	6,151	5,119	0
1997	231	15,993	17,501	4,341	37,835	0	138	6,647	6,501	1,323
1998	1,400	14,000	17,250	11,710	42,960	0	306	9,161	14,505	0
1999	1,450	21,100	18,070	12,330	51,500	0	255	9,739	16,074	0
2000	1,510	21,200	18,470	13,050	52,720	0	260	10,207	14,651	0
2001	1,570	21,350	18,880	13,665	53,895	0	311	10,611	13,468	0
2002	1,630	14,056	18,150	14,185	46,391	0	321	10,938	12,269	0
2003	1,708	21,300	19,700	14,800	55,800	0	321	10,938	12,269	0
2004	1,786	21,350	20,100	15,400	56,850	0	321	10,938	12,269	0
2005	1,864	21,400	20,100	16,000	57,500	0	321	10,938	12,269	0
2006	1,942	21,450	20,100	16,450	58,000	0	321	10,938	12,269	0
2007	2,020	21,500	20,100	17,100	58,700	0	321	10,938	12,269	0
2008	2,080	21,550	20,100	17,650	59,300	0	321	10,938	12,269	0
2009	2,140	21,600	20,100	18,200	59,900	0	321	10,938	12,269	0
2010	2,200	21,650	20,100	18,750	60,500	0	321	10,938	12,269	0
2011	2,260	21,700	20,100	19,400	61,200	0	321	10,938	12,269	0
2012	2,320	21,750	20,100	19,950	61,800	0	321	10,938	12,269	0
2013	2,396	21,800	20,100	20,600	62,500	0	321	10,938	12,269	0
2014	2,472	21,850	20,100	21,250	63,200	0	321	10,938	12,269	0
2015	2,548	21,900	20,100	21,900	63,900	0	321	10,938	12,269	0
2016	2,624	21,900	20,100	22,500	64,500	0	321	10,938	12,269	0
2017	2,700	21,900	20,100	23,100	65,100	0	321	10,938	12,269	0
2018	2,700	21,900	20,100	23,700	65,700	0	321	10,938	12,269	0
2019	2,700	21,900	20,100	24,300	66,300	0	321	10,938	12,269	0
2020	2,700	21,900	20,100	24,900	66,900	0	321	10,938	12,269	0
2021	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2022	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2023	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2024	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2025	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2026	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2027	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2028	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2029	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2030	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2031	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2032	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2033	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2034	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
2035	2,700	21,900	20,100	25,000	67,000	0	321	10,938	12,269	0
Total	99,692	884,750	889,469	940,806	2,715,025	53,844	30,325	560,721	591,002	11,722

a) For the period 1968 through 1987, deliveries are non-SWP water pumped through an interim facility.

TABLE B5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	South Bay Aqueduct (b (continued)						California Aqueduct							
							North San Joaquin Division			San Luis Division				
	Reach 5	Reach 6	Reach 7	Reach 8	Reach 9		Reach 2A			Reach 3		Reach 4		
Calendar Year	AC FC&WCD (11)	AC FC&WCD (12)	ACWD (13)	ACWD (14)	SCVWD (15)	Total (16)	OFWD (c (17)	TLBWSD (18)	SCVWD (19)	MWDSC (20)	DRWD (21)	KCWA (M&I) (22)	KCWA (Ag) (23)	DRWD (24)
1962	0	0	0	0	0	8,906	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	12,645	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	20,911	0	0	0	0	0	0	0	0
1965	0	0	1,127	0	15,014	34,026	0	0	0	0	0	0	0	0
1966	0	0	14,864	0	34,538	54,913	0	0	0	0	0	0	0	0
1967	0	0	12,882	0	39,101	56,763	0	0	0	0	0	0	0	0
1968	5	0	24,817	0	70,105	101,055	3,084	0	0	0	0	0	0	0
1969	160	0	813	0	62,264	69,712	3,016	0	0	0	0	0	0	0
1970	164	0	0	0	80,311	89,560	5,911	0	0	0	0	0	0	0
1971	160	0	5,961	0	87,606	98,584	7,212	0	0	0	0	0	0	0
1972	2,777	0	26,182	0	100,266	138,426	8,166	0	0	0	0	0	0	0
1973	229	0	2,521	0	88,582	94,078	3,214	0	0	0	0	0	0	0
1974	162	0	0	4	88,000	89,318	3,471	0	0	0	0	0	0	0
1975	120	714	393	593	88,000	93,604	3,576	0	0	0	0	0	0	0
1976	817	5,461	13,774	7,526	88,000	126,431	4,112	0	0	0	0	0	0	0
1977	524	5,206	11,284	7,556	76,220	107,704	1,472	0	0	0	0	0	0	0
1978	2,034	2,348	854	5,009	95,727	112,574	3,906	0	0	0	0	0	0	0
1979	3,937	5,341	3,430	7,444	91,991	122,190	6,149	0	0	0	0	0	0	0
1980	0	6,144	2,824	6,702	88,000	115,824	5,700	0	0	0	0	0	0	0
1981	1,157	7,262	7,595	8,570	88,000	129,507	4,300	0	0	0	0	0	0	0
1982	630	4,571	1,776	4,540	87,261	106,700	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	6,888	1,871	11,591	44,850	77,135	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	2,829	18,162	6,696	25,304	70,000	146,963	5,700	0	0	0	0	0	0	0
1999	2,960	16,972	5,264	29,236	100,000	180,500	5,700	0	0	0	0	0	0	0
2000	3,160	17,722	5,264	29,236	100,000	180,500	5,700	0	0	0	0	0	0	0
2001	3,160	18,460	7,617	26,883	100,000	180,510	5,700	0	0	0	0	0	0	0
2002	3,160	19,312	4,259	30,241	100,000	180,500	5,700	0	0	0	0	0	0	0
2003	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2004	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2005	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2006	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2007	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2008	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2009	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2010	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2011	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2012	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2013	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2014	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2015	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2016	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2017	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2018	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2019	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2020	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2021	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2022	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2023	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2024	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2025	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2026	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2027	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2028	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2029	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2030	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2031	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2032	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2033	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2034	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
2035	3,160	19,312	9,515	32,485	100,000	188,000	5,700	0	0	0	0	0	0	0
Total	144,514	893,643	600,657	1,396,201	6,171,906	10,454,535	346,459	300	200	11,000	602	1,125	20,309	16,344

b) For the period June 1962 through November 1967, deliveries were supplied by non-SWP water.
c) Includes 425 AF of 1988 advance entitlement and 141 AF of 1992 advance entitlement.

TABLE B5A

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			Reach 8c
Calendar Year	TLBWSD (25)	CLWA (26)	TLBWSD (27)	KCWA(M&I) (28)	KCWA(Ag) (29)	DRWD (30)	OFWD (31)	KCWA(Ag) (32)	KCWA(Ag) (33)	KCWA(M&I) (34)	CLWA (35)	KCWA(M&I) (36)
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	0	0	0	0	0	0
1973	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
1975	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
1977	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
1979	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
1981	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
1983	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
1985	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
1987	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	18,831	0	0	8,260	5,262	0	0	0
1990	1,500	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	10,823	0	0	0	0	0	0
1993	0	5,095	1,624	0	28,200	27,200	2,000	31,200	10,043	18,157	0	0
1994	0	0	0	0	0	0	0	0	0	0	2,100	0
1995	0	0	0	0	21,776	0	0	3,932	20,595	10,875	0	989
1996	0	0	4,000	1,125	81,507	0	0	0	69,704	3,424	0	0
1997	0	0	3,500	9,080	154,940	0	0	0	32,463	27,079	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0
2002	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
2004	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
2006	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
2008	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
2010	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
2012	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
2014	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
2016	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
2018	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
2020	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
2022	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
2024	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
2026	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
2028	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
2030	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
2032	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
2034	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
Total	1,500	5,095	9,124	10,205	305,254	38,023	2,000	43,392	138,067	59,535	2,100	989

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)										
	South San Joaquin Division										
	Reach 8C					Reach 8D					
Calendar Year	KCWA (Ag) (37)	DRWD (38)	TLBWSD (39)	EWSID (40)	CK (41)	KCWA (M&I) (42)	KCWA (Ag) (43)	DRWD (44)	CK (45)	SLOC FC&WCD (46)	TLBWSD (47)
1962	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	25,100	1,978	900	0	0	26,360	0	0	0
1969	0	0	7,081	56	100	0	0	31,375	0	0	0
1970	0	0	0	3,942	0	0	0	40,407	0	0	3,408
1971	0	0	80,906	5,990	3,700	0	0	41,053	0	0	41,579
1972	0	0	144,843	5,795	1,400	0	0	42,443	0	0	113,550
1973	0	0	26,317	3,000	1,500	0	1,500	22,057	0	0	24,147
1974	0	0	32,603	3,000	1,500	0	0	33,390	0	0	39,686
1975	0	0	41,536	3,000	1,600	0	0	40,555	0	0	44,722
1976	0	0	26,595	3,000	1,600	0	0	41,421	0	0	32,216
1977	0	0	12,984	738	1,530	0	0	11,153	0	0	5,097
1978	0	0	3,934	454	2,070	0	0	51,747	0	0	8,119
1979	0	0	74,758	1,739	2,000	0	0	38,544	0	0	80,363
1980	0	0	35,140	894	2,200	0	0	41,000	0	0	34,104
1981	0	0	50,888	5,859	2,300	0	0	41,000	0	0	32,550
1982	0	0	4,405	361	1,536	0	0	41,000	214	0	14,146
1983	0	0	1,001	0	3,550	0	0	42,900	0	0	5
1984	0	0	3,677	0	3,100	0	0	45,100	0	0	2,066
1985	0	0	68,638	5,197	3,400	0	0	46,251	0	0	41,153
1986	0	0	40,017	1,170	3,700	0	0	50,249	0	0	39,338
1987	0	0	30,359	2,525	4,000	0	0	46,288	0	0	62,725
1988	0	0	47,831	3,775	4,000	0	0	47,994	0	0	48,035
1989	0	2,391	63,703	3,000	4,000	0	0	52,158	0	0	63,947
1990	0	0	23,504	1,279	2,000	0	161	36,296	0	0	32,066
1991	0	0	1,697	221	0	0	0	927	0	0	483
1992	0	280	15,982	1,354	1,806	0	0	12,667	0	0	30,746
1993	0	0	57,112	2,741	4,000	0	0	23,221	0	0	65,732
1994	0	0	21,510	1,666	2,116	0	1,726	28,793	0	0	40,852
1995	10,527	0	40,934	1,631	4,000	2,959	27,270	45,240	0	0	57,435
1996	1,500	95	84,130	1,868	4,000	0	1,455	52,722	0	100	148,745
1997	1,500	0	9,467	0	0	0	0	57,496	0	100	9,402
1998	0	0	50,200	3,542	4,000	0	0	56,570	0	0	75,300
1999	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2000	0	0	47,300	3,000	4,000	0	0	53,370	0	0	71,100
2001	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2002	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2003	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2004	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2005	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2006	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2007	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2008	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2009	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2010	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2011	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2012	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2013	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2014	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2015	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2016	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2017	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2018	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2019	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2020	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2021	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2022	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2023	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2024	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2025	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2026	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2027	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2028	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2029	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2030	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2031	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2032	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2033	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2034	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
2035	0	0	47,400	3,000	4,000	0	0	53,370	0	0	71,100
Total	13,527	2,766	2,880,552	180,775	219,608	2,959	32,112	3,163,067	214	200	3,822,417

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 (48)	KCWA (M&I) (49)	KCWA (Ag) (50)	TLBWSD (51)	MWDSC (52)	KCWA (M&I) (53)	TLBWSD (54)	KCWA (Ag) (55)	SCVWD (56)	ACWD (57)	TLBWSD (58)	KCWA (M&I) (59)	KCWA (Ag) (60))
1962	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
1964	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
1966	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
1968	0	0	30,951	0	0	0	0	0	0	0	0	0	24,776
1969	0	0	24,489	0	0	0	0	0	0	0	2,842	0	64,682
1970	0	0	46,114	1,855	0	0	0	158	0	0	4,315	0	72,279
1971	0	0	58,356	0	0	0	0	9,973	0	0	0	0	63,773
1972	0	0	75,464	0	0	0	0	5,876	0	0	0	0	72,358
1973	0	0	54,583	0	0	0	0	22,948	0	0	0	0	67,544
1974	0	0	63,814	0	0	10,019	0	22,719	0	0	0	0	87,476
1975	0	0	50,021	0	0	2,791	0	72,121	0	0	0	0	85,675
1976	0	0	53,465	0	0	74	0	50,444	0	0	0	0	85,067
1977	0	0	24,668	0	0	201	0	34,451	0	0	0	3,981	29,603
1978	0	0	72,231	0	0	0	0	161,889	0	0	0	0	88,753
1979	0	0	74,524	0	0	285	0	153,245	0	0	0	484	108,379
1980	0	0	79,946	0	0	3,780	0	131,836	0	0	0	3,112	103,207
1981	0	0	76,508	0	0	341	0	133,500	0	0	0	494	104,395
1982	0	0	76,877	0	0	4,700	0	164,832	0	0	0	798	99,081
1983	0	2,217	84,573	0	0	0	0	146,493	0	0	0	2,069	94,117
1984	0	4,100	85,732	0	0	6,910	0	150,302	0	0	0	2,349	124,819
1985	0	0	67,696	0	0	6,495	0	153,473	0	0	0	10,666	118,646
1986	0	0	79,943	0	0	5,065	0	198,099	0	0	0	8,673	124,836
1987	0	0	97,732	0	0	900	0	226,521	0	0	0	13,074	111,877
1988	0	1,100	83,858	0	0	8,229	0	213,795	0	0	0	13,509	114,031
1989	0	0	91,134	0	0	21,038	0	251,979	0	0	0	9,986	127,058
1990	0	0	83,108	0	0	25,189	0	47,472	0	0	0	9,319	104,107
1991	0	13,683	601	0	0	1,142	0	6,820	0	0	0	6,099	118
1992	0	28	40,183	0	0	3,685	0	89,390	0	0	0	7,419	35,093
1993	197	0	59,542	0	44,496	775	0	233,862	0	0	0	2,250	73,091
1994	0	0	44,994	0	0	5,227	0	126,792	0	0	0	3,506	71,202
1995	0	0	64,076	0	50,000	366	0	229,448	0	0	0	1,154	97,072
1996	0	0	91,527	0	95,000	6,666	0	199,854	45,000	6,200	0	1,185	96,250
1997	5,200	0	72,013	0	125,000	3,577	600	157,385	35,000	10,000	0	1,111	104,823
1998	0	0	94,266	0	74,617	500	0	316,865	0	10,000	0	2,000	113,265
1999	0	0	91,166	0	0	500	0	314,465	0	7,500	0	2,000	113,265
2000	0	0	91,166	0	0	500	0	314,465	0	0	0	2,000	113,265
2001	0	0	91,166	0	0	500	0	314,465	0	0	0	2,000	113,265
2002	0	0	91,166	0	0	500	0	314,465	0	0	0	2,000	113,265
2003	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2004	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2005	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2006	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2007	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2008	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2009	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2010	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2011	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2012	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2013	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2014	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2015	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2016	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2017	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2018	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2019	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2020	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2021	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2022	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2023	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2024	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2025	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2026	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2027	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2028	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2029	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2030	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2031	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2032	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2033	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2034	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
2035	0	0	89,868	0	0	500	0	321,768	0	0	0	19,160	96,386
Total	5,397	21,128	5,333,297	1,855	389,113	136,455	600	15,588,746	80,000	33,700	7,157	743,518	6,301,251

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) (61)	KCWA (Ag) (62)	DRWD (63)	MWDSC (64)	KCWA (M&I) (65)	TLBWSD (66)	KCWA (Ag) (67)	KCWA (M&I) (68)	KCWA (Ag) (69)	KCWA (M&I) (70)	KCWA (Ag) (71)
1962	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0
1970	0	9,279	0	0	0	0	4,891	0	0	0	3
1971	0	28,056	0	0	0	0	0	0	23,844	0	49,929
1972	0	62,342	0	0	0	0	17,388	0	26,621	0	77,034
1973	0	13,082	0	0	0	0	9,297	0	15,328	0	47,040
1974	2,651	4,248	0	0	8,038	0	4,246	0	7,794	0	32,356
1975	0	10,787	0	0	8,538	0	7,059	0	10,306	0	27,736
1976	37,519	20,555	0	0	5,626	0	8,855	0	268	0	35,296
1977	20,280	1,737	0	0	0	0	5,024	0	8,299	0	13,539
1978	47,133	15,011	0	0	21,773	0	7,601	0	34,029	0	72,351
1979	50,740	61,567	0	0	5,663	0	17,766	3,012	27,356	0	59,413
1980	32,039	22,252	0	0	0	0	22,515	4,312	16,876	0	40,513
1981	59,917	58,470	0	0	7,844	0	14,037	4,511	13,007	8	42,753
1982	36,139	75,587	0	0	0	0	25,553	5,373	22,602	184	57,739
1983	0	10,950	0	0	0	0	3,491	1,168	20,302	0	57,922
1984	63,941	39,929	0	0	12,117	0	26,178	137	35,369	10	79,179
1985	69,839	84,117	0	0	0	0	67,711	206	33,103	0	72,855
1986	62,109	51,540	0	0	0	0	66,551	180	26,384	0	70,864
1987	95,297	86,223	0	0	5,609	0	40,374	610	30,098	9	67,710
1988	86,390	123,249	0	0	9,298	0	47,167	604	32,796	4	75,983
1989	83,965	146,544	0	0	5,504	0	57,114	721	29,292	7	82,201
1990	82,164	38,973	0	0	7,645	0	20,423	673	26,800	13	81,076
1991	8,842	303	0	0	0	0	0	768	0	0	0
1992	47,181	57,048	0	0	789	0	17,449	673	16,238	464	41,143
1993	84,822	285,554	0	5,504	12,798	0	88,157	629	17,832	0	62,493
1994	66,188	77,839	0	0	2,494	0	33,148	2,513	16,760	3,000	54,011
1995	107,130	181,097	1,000	0	8,751	3,500	110,685	3	21,234	0	67,391
1996	91,858	131,559	4,131	0	28,063	0	64,849	0	26,978	0	85,936
1997	32,061	128,329	8,012	1,486	43,803	0	43,960	0	23,035	0	79,790
1998	102,900	108,946	0	77,176	12,000	0	46,800	0	29,700	0	85,750
1999	102,900	105,034	0	12,500	12,000	0	41,800	0	28,400	0	82,700
2000	102,900	105,034	0	12,500	12,000	0	41,800	0	28,400	0	82,700
2001	102,900	105,034	0	12,500	12,000	0	41,800	0	28,400	0	82,700
2002	102,900	105,034	0	12,500	12,000	0	41,800	0	28,400	0	82,700
2003	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2004	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2005	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2006	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2007	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2008	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2009	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2010	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2011	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2012	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2013	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2014	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2015	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2016	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2017	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2018	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2019	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2020	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2021	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2022	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2023	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2024	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2025	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2026	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2027	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2028	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2029	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2030	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2031	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2032	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2033	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2034	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
2035	99,640	102,480	0	0	11,100	0	40,421	0	27,839	0	80,636
Total	5,070,825	5,737,149	13,143	134,166	620,653	3,500	2,379,382	26,093	1,624,538	3,699	4,611,794

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) (72)	KCWA (Ag) (73)	KCWA (M&I) (74)	KCWA (Ag) (75)	KCWA (M&I) (76)	KCWA (Ag) (77)	AVEKWA (78)	AVEKWA (79)	MWA (80)	AVEKWA (81)	AVEKWA (82)
1962	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0
1970	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
1972	0	35,016	0	6,064	0	4,768	0	0	0	0	0
1973	0	19,043	0	19,916	0	1,961	0	0	0	0	0
1974	0	12,601	0	18,000	3,000	1,564	0	0	0	0	1,223
1975	0	12,783	0	35,420	3,200	9,867	0	0	0	0	7,622
1976	0	9,005	0	39,551	3,500	11,667	0	3,808	0	0	23,063
1977	0	3,757	0	6,158	3,420	685	0	1,231	0	0	8,927
1978	0	24,542	0	31,148	7,989	1,655	0	1,321	0	0	36,333
1979	0	22,372	0	38,602	2,813	15,808	0	2,098	0	0	49,910
1980	0	19,953	0	37,817	2,700	16,145	0	2,610	0	0	61,534
1981	7	18,729	0	39,033	2,636	18,156	0	2,340	0	0	65,690
1982	0	26,479	0	47,782	1,289	17,209	0	1,669	0	0	41,127
1983	0	26,613	0	37,426	1,400	17,907	0	43	0	0	26,377
1984	2	34,996	0	49,848	1,338	24,202	0	90	0	0	22,462
1985	0	31,758	0	44,078	1,309	16,820	0	8	0	0	23,440
1986	0	34,566	0	42,461	1,213	15,559	0	8	0	0	16,898
1987	9	31,019	0	34,748	1,665	10,170	0	0	0	0	15,958
1988	0	37,166	2	41,992	1,913	8,999	0	0	0	0	13,471
1989	5	37,800	2	43,239	2,668	8,649	0	0	0	0	18,007
1990	9	34,174	6	36,347	2,819	8,608	0	0	0	0	17,281
1991	0	0	0	0	2,588	343	2,000	0	0	0	728
1992	0	18,084	0	24,243	2,087	8,275	0	0	0	0	7,238
1993	0	28,103	0	27,997	2,494	9,167	0	0	0	0	13,340
1994	1,000	22,624	0	29,511	3,011	13,877	0	0	0	0	19,122
1995	0	31,285	0	26,134	3,188	15,042	0	0	0	0	20,222
1996	0	38,879	0	36,186	2,573	18,142	0	0	0	0	23,919
1997	0	33,512	0	36,281	3,997	17,048	0	0	133	0	28,765
1998	0	39,650	0	40,700	6,200	19,588	0	0	0	25,017	2,029
1999	0	38,000	0	40,700	4,200	19,500	0	0	0	27,424	2,029
2000	0	38,000	0	40,700	4,200	19,500	0	0	0	27,858	2,029
2001	0	38,000	0	40,700	4,200	19,500	0	0	0	28,320	2,029
2002	0	38,000	0	40,700	4,200	19,500	0	0	0	28,814	2,029
2003	0	38,182	0	41,750	4,200	20,147	0	0	0	29,554	2,085
2004	0	38,182	0	41,750	4,200	20,147	0	0	0	30,877	2,174
2005	0	38,182	0	41,750	4,200	20,147	0	0	0	32,260	2,272
2006	0	38,182	0	41,750	4,200	20,147	0	0	0	33,711	2,376
2007	0	38,182	0	41,750	4,200	20,147	0	0	0	35,232	2,485
2008	0	38,182	0	41,750	4,200	20,147	0	0	0	36,815	2,593
2009	0	38,182	0	41,750	4,200	20,147	0	0	0	38,470	2,704
2010	0	38,182	0	41,750	4,200	20,147	0	0	0	40,210	2,826
2011	0	38,182	0	41,750	4,200	20,147	0	0	0	42,019	2,961
2012	0	38,182	0	41,750	4,200	20,147	0	0	0	43,905	3,093
2013	0	38,182	0	41,750	4,200	20,147	0	0	0	45,881	3,228
2014	0	38,182	0	41,750	4,200	20,147	0	0	0	47,945	3,378
2015	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2016	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2017	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2018	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2019	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2020	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2021	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2022	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2023	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2024	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2025	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2026	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2027	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2028	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2029	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2030	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2031	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2032	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2033	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2034	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
2035	0	38,182	0	41,750	4,200	20,147	0	0	0	48,401	3,410
Total	1,032	2,120,702	10	2,414,784	226,410	1,054,732	2,000	15,226	133	1,610,733	676,587

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 (83)	MWA (84)	AVEKWA (85)	PWD (86)	AVEKWA (87)	LCID (88)	PWD (89)	AVEKWA (90)	MWDSC(d (91)
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	338	0	0	0
1973	0	0	0	0	0	290	0	0	(14,800)
1974	0	0	0	0	0	400	0	0	(16,400)
1975	0	0	420	0	0	520	0	0	(18,000)
1976	0	0	471	0	416	589	0	0	(19,600)
1977	0	0	773	0	271	111	0	0	0
1978	0	0	5,549	0	934	208	0	0	(25,384)
1979	0	0	7,555	0	930	133	0	0	(25,063)
1980	0	0	7,605	0	655	191	0	3	(27,884)
1981	0	0	10,333	0	966	1,270	0	46	(31,105)
1982	0	0	7,313	0	8	0	0	174	(34,326)
1983	0	0	6,253	0	20	38	0	268	(37,547)
1984	0	0	9,558	0	2	1	0	550	(40,768)
1985	1,510	0	11,613	32	217	0	16	1,786	(43,989)
1986	3,041	0	13,808	45	0	163	10	1,735	(47,210)
1987	2,389	0	15,493	1,624	151	1,080	1,366	2,278	(50,931)
1988	366	0	17,117	1,261	281	419	143	3,210	(54,652)
1989	381	0	23,481	7,848	112	971	780	3,591	(58,373)
1990	282	0	25,843	8,292	84	1,747	34	3,988	(61,200)
1991	84	1,391	4,282	3,830	131	522	0	2,427	(18,360)
1992	185	1,310	18,518	3,850	650	251	0	3,859	(27,624)
1993	164	1,514	23,662	7,597	996	734	0	5,098	0
1994	299	1,399	25,250	8,119	124	1,098	0	4,657	0
1995	328	1,227	22,385	6,633	0	480	0	4,679	0
1996	330	1,316	26,899	11,080	0	494	0	5,458	0
1997	313	1,272	27,999	11,548	0	444	0	5,437	0
1998	351	1,500	34,000	16,949	0	2,290	0	5,121	0
1999	351	1,500	36,201	16,949	1,326	2,290	0	5,379	0
2000	351	1,500	38,543	16,949	1,412	2,300	0	5,883	0
2001	351	1,500	41,038	16,949	1,503	2,300	0	5,945	0
2002	351	1,500	43,696	16,949	1,600	2,300	0	6,256	0
2003	351	1,500	44,807	16,949	1,640	2,300	0	6,414	0
2004	351	1,500	46,829	16,949	1,715	2,300	0	6,705	0
2005	351	1,500	48,922	16,949	1,792	2,300	0	7,004	0
2006	351	1,500	51,123	16,949	1,871	2,300	0	7,319	0
2007	351	1,500	53,427	16,949	1,955	2,300	0	7,651	0
2008	351	1,500	55,829	16,949	2,045	2,300	0	7,993	0
2009	351	1,500	58,339	16,949	2,135	2,300	0	8,352	0
2010	351	1,500	60,976	16,949	2,233	2,300	0	8,730	0
2011	351	1,500	63,716	16,949	2,333	2,300	0	9,121	0
2012	351	1,500	66,584	16,949	2,438	2,300	0	9,535	0
2013	351	1,500	69,580	16,949	2,549	2,300	0	9,962	0
2014	351	1,500	72,706	16,949	2,662	2,300	0	10,409	0
2015	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2016	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2017	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2018	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2019	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2020	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2021	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2022	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2023	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2024	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2025	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2026	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2027	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2028	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2029	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2030	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2031	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2032	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2033	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2034	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
2035	351	1,500	73,396	16,949	2,686	2,300	0	10,507	0
Total	23,010	66,429	2,739,812	715,821	94,563	99,872	2,349	397,670	(653,216)

d) In accordance with the Exchange Agreement between the noted agencies, MWDSC assumed responsibility for payment of variable OMP&R costs on the exchange water in reaches beyond Reach 22B, and Desert Water Agency and Coachella Valley Water District for such costs from the Delta through Reach 22B. The adjustment in deliveries in Reach 22B provides for compliance with provisions for the repayment of costs under the agreement in 1993 and after the exchange takes place in Reach 26 A.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)								
	Mojave Division (continued)								Santa Ana Division
	Reach 22B					Reach 23	Reach 24		Reach 26A
	CVWD(d (92)	AVEKWA(e (93)	SCWA (94)	DWA(d (95)	MWA (96)	MWA (97)	CLAWA (98)	MWA (99)	MWDSC(f (100)
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	96,121
1994	0	0	0	0	14,634	0	785	819	192,979
1995	0	0	0	0	7,495	0	409	0	108,758
1996	0	0	0	0	6,111	0	485	0	113,840
1997	0	0	2,000	0	11,576	0	651	1,062	157,215
1998	0	0	0	0	13,500	0	1,950	0	524,112
1999	0	0	0	0	18,500	0	1,950	0	709,450
2000	0	0	0	0	18,500	0	1,950	0	744,250
2001	0	0	0	0	18,500	0	1,950	0	757,250
2002	0	0	0	0	18,500	0	1,950	0	655,700
2003	0	0	0	0	18,500	0	2,150	0	369,055
2004	0	0	0	0	23,500	0	2,350	0	374,918
2005	0	0	0	0	28,500	0	2,550	0	380,787
2006	0	0	0	0	33,500	0	2,710	0	386,651
2007	0	0	0	0	38,500	0	2,910	0	392,515
2008	0	0	0	0	43,500	0	3,110	0	398,374
2009	0	0	0	0	48,500	0	3,310	0	404,239
2010	0	0	0	0	53,500	0	3,350	0	410,108
2011	0	0	0	0	58,500	0	3,540	0	415,971
2012	0	0	0	0	63,500	0	3,730	0	421,839
2013	0	0	0	0	68,500	0	3,920	0	427,700
2014	0	0	0	0	74,300	0	4,110	0	433,564
2015	0	0	0	0	74,300	0	4,300	0	439,438
2016	0	0	0	0	74,300	0	4,440	0	445,302
2017	0	0	0	0	74,300	0	4,580	0	451,165
2018	0	0	0	0	74,300	0	4,720	0	457,033
2019	0	0	0	0	74,300	0	4,860	0	462,899
2020	0	0	0	0	74,300	0	5,000	0	518,761
2021	0	0	0	0	74,300	0	5,090	0	521,890
2022	0	0	0	0	74,300	0	5,180	0	521,890
2023	0	0	0	0	74,300	0	5,270	0	521,890
2024	0	0	0	0	74,300	0	5,360	0	521,890
2025	0	0	0	0	74,300	0	5,450	0	521,890
2026	0	0	0	0	74,300	0	5,500	0	521,890
2027	0	0	0	0	74,300	0	5,550	0	521,890
2028	0	0	0	0	74,300	0	5,600	0	521,890
2029	0	0	0	0	74,300	0	5,650	0	521,890
2030	0	0	0	0	74,300	0	5,700	0	521,890
2031	0	0	0	0	74,300	0	5,720	0	521,890
2032	0	0	0	0	74,300	0	5,740	0	521,890
2033	0	0	0	0	74,300	0	5,760	0	521,890
2034	0	0	0	0	74,300	0	5,780	0	521,890
2035	0	0	0	0	74,300	0	5,800	0	521,890
Total	251,189	313	2,000	402,027	2,263,061	272	186,343	23,247	23,617,950

e) 1988 advance entitlement.

f) In accordance with the Exchange Agreement between the noted agencies, MWDSC assumed responsibility for payment of variable OMP&R costs on the exchange water in reaches beyond Reach 22B, and Desert Water Agency and Coachella Valley Water District for such costs from the Delta through Reach 22B.
The adjustment in deliveries in Reach 22B provides for compliance with provisions for the repayment of costs under the agreement. In 1993 and after the exchange takes place in Reach 26A.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)											
	Santa Ana Division (continued)											
	Reach 26A					Reach 28G	Reach 28H			Reach 28J		
Calendar Year	SBVMWD(g (101)	SGVMWD (102)	SGPWA (103)	CVWD(f (104)	DWA(f (105)	MWDSC (106)	CVWD (107)	DWA (108)	MWDSC (109)	CVWD (110)	DWA (111)	MWDSC (112)
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0
1972	1,275	0	0	0	0	0	0	0	0	0	0	0
1973	32,426	0	0	0	0	18,942	0	0	0	0	0	0
1974	16,605	612	0	0	0	0	0	0	0	0	0	0
1975	13,865	5,450	0	0	0	0	0	0	0	0	0	251
1976	12,273	6,071	0	0	0	0	0	0	55	0	0	2,000
1977	24,833	8,996	0	0	0	0	0	0	43	0	0	2,442
1978	4,055	7,771	0	0	0	0	0	0	48	0	0	64,054
1979	18	290	0	0	0	0	0	0	1,290	0	0	94,353
1980	0	1,085	0	0	0	0	0	0	3,013	0	0	91,532
1981	16,021	3,619	0	0	0	0	0	0	4,365	0	0	149,405
1982	8,409	12,599	0	0	0	0	0	0	3,961	0	0	155,629
1983	5,994	734	0	0	0	0	0	0	6,645	0	0	41,616
1984	5,556	7,656	0	0	0	0	0	0	109,743	0	0	5,672
1985	7,390	5,028	0	0	0	0	0	0	182,781	0	0	6,538
1986	6,421	9,454	0	0	0	0	0	0	131,439	0	0	30,071
1987	18,751	10,630	0	0	0	0	0	0	144,743	0	0	26,315
1988	21,386	8,948	0	0	0	0	0	0	199,641	0	0	22,209
1989	20,782	12,839	0	0	0	0	0	0	247,430	0	0	51,462
1990	18,831	16,649	0	0	0	0	0	0	257,796	0	0	36,060
1991	3,661	5,399	0	0	0	0	0	0	38,832	0	0	5,958
1992	3,358	7,908	0	0	0	0	0	0	85,341	0	0	12,223
1993	4,361	14,397	0	23,100	38,100	0	0	0	63,887	0	0	4,712
1994	9,135	15,230	0	14,102	23,257	0	0	0	134,262	0	0	4,725
1995	696	12,922	0	23,100	38,100	0	0	0	116,672	0	0	20,730
1996	6,064	15,989	0	48,241	79,566	0	13,328	21,984	107,896	650	1,072	9,026
1997	11,859	18,175	0	58,100	53,100	0	0	0	107,853	0	0	47,777
1998	102,600	18,000	0	23,100	38,100	0	0	0	196,395	0	0	3,600
1999	53,600	28,800	1,200	23,100	38,100	0	0	0	319,500	0	0	27,700
2000	57,500	16,000	3,000	23,100	38,100	0	0	0	367,500	0	0	22,700
2001	60,700	16,400	3,600	23,100	38,100	0	0	0	364,500	0	0	22,700
2002	64,200	16,000	4,800	23,100	38,100	0	0	0	363,300	0	0	23,600
2003	102,600	28,800	5,200	23,100	38,100	0	0	0	310,409	0	0	27,218
2004	102,600	28,800	5,200	23,100	38,100	0	0	0	315,346	0	0	27,650
2005	102,600	28,800	6,500	23,100	38,100	0	0	0	320,275	0	0	28,082
2006	102,600	28,800	7,000	23,100	38,100	0	0	0	325,207	0	0	28,516
2007	102,600	28,800	7,500	23,100	38,100	0	0	0	330,140	0	0	28,950
2008	102,600	28,800	17,300	23,100	38,100	0	0	0	335,077	0	0	29,382
2009	102,600	28,800	17,300	23,100	38,100	0	0	0	340,009	0	0	29,814
2010	102,600	28,800	17,300	23,100	38,100	0	0	0	344,939	0	0	30,246
2011	102,600	28,800	17,300	23,100	38,100	0	0	0	349,873	0	0	30,680
2012	102,600	28,800	17,300	23,100	38,100	0	0	0	354,804	0	0	31,112
2013	102,600	28,800	17,300	23,100	38,100	0	0	0	359,741	0	0	31,544
2014	102,600	28,800	17,300	23,100	38,100	0	0	0	364,675	0	0	31,976
2015	102,600	28,800	17,300	23,100	38,100	0	0	0	369,606	0	0	32,404
2016	102,600	28,800	17,300	23,100	38,100	0	0	0	374,539	0	0	32,836
2017	102,600	28,800	17,300	23,100	38,100	0	0	0	379,474	0	0	33,268
2018	102,600	28,800	17,300	23,100	38,100	0	0	0	384,406	0	0	33,700
2019	102,600	28,800	17,300	23,100	38,100	0	0	0	389,337	0	0	34,134
2020	102,600	28,800	17,300	23,100	38,100	0	0	0	344,269	0	0	34,566
2021	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2022	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2023	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2024	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2025	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2026	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2027	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2028	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2029	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2030	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2031	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2032	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2033	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2034	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
2035	102,600	28,800	17,300	23,100	38,100	0	0	0	346,905	0	0	34,800
Total	3,998,425	1,254,051	528,400	1,044,443	1,679,923	18,942	13,328	21,984	15,054,632	650	1,072	2,063,138

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 (113)	VCFCD (114)	CVWD (115)	DWA (116)	MWDSC(h (117)	VCFCD (118)	CLWA (119)	SBCFC&WCD (120)	KCWA (M&I) (121)	KCWA (Ag) (122)
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	3,200	97,378
1997	11	0	10,240	16,890	273,229	0	22,842	0	0	97,020
1998	0	3,150	0	0	483,550	6,850	23,000	0	0	92,100
1999	0	3,150	0	0	533,700	6,850	25,300	0	0	91,100
2000	0	3,150	0	0	565,700	6,850	27,830	0	0	91,100
2001	0	3,150	0	0	555,700	6,850	30,616	0	0	91,100
2002	0	3,150	0	0	491,550	6,850	33,674	0	0	91,100
2003	0	6,300	0	0	866,468	13,700	37,042	0	0	93,653
2004	0	6,300	0	0	880,236	13,700	40,746	0	0	93,653
2005	0	6,300	0	0	894,006	13,700	44,820	0	0	93,653
2006	0	6,300	0	0	907,776	13,700	49,303	0	0	93,653
2007	0	6,300	0	0	921,545	13,700	54,200	0	0	93,653
2008	0	6,300	0	0	935,317	13,700	54,200	0	0	93,653
2009	0	6,300	0	0	949,088	13,700	54,200	0	0	93,653
2010	0	6,300	0	0	962,857	13,700	54,200	0	0	93,653
2011	0	6,300	0	0	976,626	13,700	54,200	0	0	93,653
2012	0	6,300	0	0	990,395	13,700	54,200	0	0	93,653
2013	0	6,300	0	0	1,004,165	13,700	54,200	0	0	93,653
2014	0	6,300	0	0	1,017,935	13,700	54,200	0	0	93,653
2015	0	6,300	0	0	1,031,702	13,700	54,200	0	0	93,653
2016	0	6,300	0	0	1,045,473	13,700	54,200	0	0	93,653
2017	0	6,300	0	0	1,059,243	13,700	54,200	0	0	93,653
2018	0	6,300	0	0	1,073,011	13,700	54,200	0	0	93,653
2019	0	6,300	0	0	1,086,780	13,700	54,200	0	0	93,653
2020	0	6,300	0	0	1,100,554	13,700	54,200	0	0	93,653
2021	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2022	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2023	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2024	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2025	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2026	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2027	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2028	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2029	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2030	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2031	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2032	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2033	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2034	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
2035	0	6,300	0	0	1,107,905	13,700	54,200	0	0	93,653
Total	176	229,474	10,240	16,890	45,136,839	486,350	2,133,237	1,240	3,400	6,126,873

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 (123)	SLOCFC&WCD (124)	SLOCFC&WCD (125)	SLOCFC&WCD (126)	SLOCFC&WCD (127)	Total (128)	Grand Total (129)
1962	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	56,763
1968	7,382	0	0	0	0	192,188	294,457
1969	9,970	0	0	0	0	195,705	268,104
1970	11,739	0	0	0	0	276,211	369,459
1971	12,490	0	0	0	0	553,081	654,250
1972	13,905	0	0	0	0	895,006	1,037,584
1973	9,418	0	0	0	0	638,930	737,479
1974	9,700	0	0	0	0	783,984	878,820
1975	10,700	0	0	0	0	1,129,728	1,230,577
1976	11,700	0	0	0	0	1,245,662	1,379,597
1977	5,075	0	0	0	0	465,442	581,675
1978	11,362	0	0	0	0	1,339,268	1,458,154
1979	19,138	0	0	0	0	1,537,075	1,666,155
1980	13,882	0	0	0	0	1,407,163	1,529,989
1981	12,700	0	0	0	0	1,779,479	1,918,342
1982	12,700	0	0	0	0	1,641,571	1,749,789
1983	12,659	0	0	0	0	1,089,626	1,186,831
1984	12,741	0	0	0	0	1,489,770	1,591,087
1985	12,099	0	0	0	0	1,863,544	1,989,925
1986	13,301	0	0	0	0	1,882,290	1,998,514
1987	11,821	0	0	0	0	1,984,569	2,131,060
1988	11,534	0	0	0	0	2,221,838	2,384,733
1989	14,645	0	0	0	0	2,686,838	2,853,044
1990	6,440	0	0	0	0	2,398,121	2,581,277
1991	716	0	0	0	0	489,489	548,520
1992	5,887	0	0	0	0	1,374,775	1,470,695
1993	4,157	0	0	0	0	2,173,352	2,314,233
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	2,429,846	2,542,145
1997	4,870	1,087	0	0	7,451	2,266,307	2,406,559
1998	12,700	0	5,015	0	26,070	3,037,284	3,228,607
1999	12,700	0	3,804	0	45,486	3,238,639	3,472,089
2000	12,700	0	3,859	0	45,486	3,339,700	3,574,430
2001	12,700	0	3,817	0	45,486	3,349,854	3,585,829
2002	12,700	0	3,837	0	45,486	3,194,792	3,423,313
2003	12,700	0	25,000	0	45,486	3,309,728	3,555,236
2004	12,700	0	25,000	0	45,486	3,347,432	3,594,068
2005	9,380	0	25,000	0	45,486	3,383,636	3,631,000
2006	4,897	0	25,000	0	45,486	3,418,446	3,666,388
2007	0	0	25,000	0	45,486	3,453,496	3,702,216
2008	0	0	25,000	0	45,486	3,498,021	3,747,401
2009	0	0	25,000	0	45,486	3,532,946	3,782,986
2010	0	0	25,000	0	45,486	3,567,961	3,818,661
2011	0	0	25,000	0	45,486	3,603,326	3,854,786
2012	0	0	25,000	0	45,486	3,638,921	3,891,041
2013	0	0	25,000	0	45,486	3,674,756	3,927,652
2014	0	0	25,000	0	45,486	3,711,646	3,965,318
2015	0	0	25,000	0	45,486	3,738,136	3,992,584
2016	0	0	25,000	0	45,486	3,763,276	4,018,400
2017	0	0	25,000	0	45,486	3,788,416	4,044,216
2018	0	0	25,000	0	45,486	3,813,556	4,069,956
2019	0	0	25,000	0	45,486	3,838,696	4,095,696
2020	0	0	25,000	0	45,486	3,863,836	4,121,436
2021	0	0	25,000	0	45,486	3,877,276	4,134,976
2022	0	0	25,000	0	45,486	3,877,366	4,135,066
2023	0	0	25,000	0	45,486	3,877,456	4,135,156
2024	0	0	25,000	0	45,486	3,877,546	4,135,246
2025	0	0	25,000	0	45,486	3,877,636	4,135,336
2026	0	0	25,000	0	45,486	3,877,686	4,135,386
2027	0	0	25,000	0	45,486	3,877,736	4,135,436
2028	0	0	25,000	0	45,486	3,877,786	4,135,486
2029	0	0	25,000	0	45,486	3,877,836	4,135,536
2030	0	0	25,000	0	45,486	3,877,886	4,135,586
2031	0	0	25,000	0	45,486	3,877,906	4,135,606
2032	0	0	25,000	0	45,486	3,877,926	4,135,626
2033	0	0	25,000	0	45,486	3,877,946	4,135,646
2034	0	0	25,000	0	45,486	3,877,966	4,135,666
2035	0	0	25,000	0	45,486	3,877,986	4,135,686
Total	418,868	1,087	845,332	0	1,716,503	181,357,637	194,626,889

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	North Bay Area			South Bay Area (b				Central Coastal Area		
	Napa (a County FC&WCD (1)	Solano County WA (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa ClaraValley 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	87,261	106,700	0	0	0
1983	2,287	0	2,287	4,766	3,157	86,733	94,656	0	0	0
1984	2,923	0	2,923	6,784	3,338	88,000	98,122	0	0	0
1985	4,039	0	4,039	15,072	19,016	88,000	122,088	0	0	0
1986	3,519	1,400	4,919	10,609	12,379	88,000	110,988	0	0	0
1987	7,693	1,550	9,243	23,406	25,390	88,000	136,796	0	0	0
1988	5,392	9,725	15,117	25,830	33,464	87,961	147,255	0	0	0
1989	6,195	17,256	23,451	26,227	26,042	90,000	142,269	0	0	0
1990	6,940	19,131	26,071	33,034	31,703	92,000	156,737	0	0	0
1991	1,380	6,972	8,352	9,411	12,648	28,200	50,259	0	1,240	1,240
1992	4,001	14,773	18,774	14,669	19,153	42,839	76,661	0	0	0
1993	5,286	29,180	34,466	33,635	10,271	62,065	105,971	0	0	0
1994	6,792	25,256	32,048	20,542	22,911	57,115	100,568	0	0	0
1995	5,182	21,345	26,527	30,091	17,793	28,756	76,640	0	0	0
1996	4,893	29,911	34,804	18,823	19,662	89,850	128,335	100	0	100
1997	4,341	35,494	39,835	27,522	24,063	95,601	147,186	1,187	7,451	8,638
1998	11,710	31,250	42,960	44,963	42,000	70,000	156,963	5,015	26,070	31,085
1999	12,330	39,170	51,500	46,000	42,000	100,000	188,000	3,804	45,486	49,290
2000	13,050	39,670	52,720	46,000	34,500	100,000	180,500	3,859	45,486	49,345
2001	13,665	40,230	53,895	46,010	34,500	100,000	180,510	3,817	45,486	49,303
2002	14,185	32,206	46,391	46,000	34,500	100,000	180,500	3,837	45,486	49,323
2003	14,800	41,000	55,800	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2004	15,400	41,450	56,850	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2005	16,000	41,500	57,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2006	16,450	41,550	58,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2007	17,100	41,600	58,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2008	17,650	41,650	59,300	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2009	18,200	41,700	59,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2010	18,750	41,750	60,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2011	19,400	41,800	61,200	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2012	19,950	41,850	61,800	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2013	20,600	41,900	62,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2014	21,250	41,950	63,200	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2015	21,900	42,000	63,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2016	22,500	42,000	64,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2017	23,100	42,000	65,100	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2018	23,700	42,000	65,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2019	24,300	42,000	66,300	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2020	24,900	42,000	66,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2021	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2022	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2023	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2024	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2025	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2026	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2027	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2028	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2029	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2030	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2031	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2032	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2033	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2034	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2035	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
Total	940,806	1,776,219	2,717,025	2,220,205	2,096,124	6,252,106	10,568,435	846,619	1,717,743	2,564,362

a) For the period 1968 through 1987, deliveries are non-SWP water pumped through an interim facility.
b) For the period June 1962 through November 1967, deliveries were supplied by non-SWP water.

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	San Joaquin Valley Area								
			Kern County Water Agency						
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Municipal and Industrial (13)	Agricultural (14)	Total (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	26,360	1,978	0	127,384	127,384	900	3,084	25,100	184,806
1969	31,375	56	0	141,265	141,265	100	3,016	9,923	185,735
1970	40,407	3,942	0	204,634	204,634	0	5,911	9,578	264,472
1971	41,053	5,990	0	360,151	360,151	3,700	7,212	122,485	540,591
1972	42,443	5,795	0	490,781	490,781	1,400	8,166	258,393	806,978
1973	22,057	3,000	0	341,469	341,469	1,500	3,214	50,464	421,704
1974	33,390	3,000	23,708	323,292	347,000	1,500	3,471	72,289	460,650
1975	40,555	3,000	14,529	396,291	410,820	1,600	3,576	86,258	545,809
1976	41,421	3,000	46,719	392,531	439,250	1,600	4,112	58,811	548,194
1977	11,153	738	27,882	163,425	191,307	1,530	1,472	18,081	224,281
1978	51,747	454	76,895	590,452	667,347	2,070	3,906	12,053	737,577
1979	38,544	1,739	62,997	683,049	746,046	2,000	6,149	155,121	949,599
1980	41,000	894	45,943	588,557	634,500	2,200	5,700	69,244	753,538
1981	41,000	5,859	75,758	615,642	691,400	2,300	4,300	83,438	828,297
1982	41,000	361	48,483	696,817	745,300	1,750	3,838	18,551	810,800
1983	42,900	0	6,854	587,653	594,507	3,550	3,822	1,006	645,785
1984	45,100	0	90,904	769,652	860,556	3,100	5,700	5,743	920,199
1985	46,251	5,197	88,515	800,381	888,896	3,400	5,433	109,791	1,058,968
1986	50,249	1,170	77,240	829,101	906,341	3,700	5,107	79,355	1,045,922
1987	46,288	2,525	117,173	852,731	969,904	4,000	5,625	93,084	1,121,426
1988	47,994	3,775	121,049	888,471	1,009,520	4,000	4,412	95,866	1,165,567
1989	57,049	3,000	123,896	1,022,166	1,146,062	4,000	6,091	127,950	1,344,152
1990	36,296	1,279	127,837	584,611	712,448	2,000	2,922	57,070	812,015
1991	927	221	33,122	8,965	42,087	0	141	2,180	45,556
1992	23,770	1,354	62,326	420,894	483,220	1,806	2,239	46,728	559,117
1993	50,618	2,741	121,925	1,046,005	1,167,930	4,000	4,858	124,468	1,354,615
1994	28,793	1,666	87,139	570,020	657,159	2,116	3,071	62,362	755,167
1995	60,686	1,631	135,415	1,016,114	1,151,529	4,000	5,169	101,869	1,324,884
1996	56,948	1,868	139,219	1,045,866	1,185,085	4,000	4,904	236,875	1,489,680
1997	71,308	0	120,708	982,099	1,102,807	0	5,238	22,369	1,201,722
1998	56,570	3,542	123,600	987,630	1,111,230	4,000	5,700	125,500	1,306,542
1999	53,370	3,000	121,600	966,130	1,087,730	4,000	5,700	118,500	1,272,300
2000	53,370	3,000	121,600	966,130	1,087,730	4,000	5,700	118,400	1,272,200
2001	53,370	3,000	121,600	966,130	1,087,730	4,000	5,700	118,500	1,272,300
2002	53,370	3,000	121,600	966,130	1,087,730	4,000	5,700	118,500	1,272,300
2003	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2004	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2005	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2006	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2007	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2008	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2009	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2010	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2011	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2012	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2013	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2014	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2015	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2016	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2017	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2018	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2019	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2020	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2021	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2022	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2023	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2024	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2025	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2026	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2027	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2028	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2029	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2030	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2031	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2032	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2033	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2034	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2035	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
Total	3,239,942	180,775	6,928,036	53,845,909	60,773,945	219,822	348,459	6,726,405	71,489,348

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency(c (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	7,382	0	0	0	0	0	0	0	0
1969	0	9,970	0	0	0	0	0	0	0	0
1970	0	11,739	0	0	0	0	0	0	0	0
1971	0	12,490	0	0	0	0	0	0	0	0
1972	53	13,905	0	464	0	338	55	0	1,275	0
1973	20	9,418	5,800	389	9,000	290	0	0	32,426	0
1974	1,259	9,700	6,400	627	10,000	400	14	0	16,605	612
1975	8,068	10,700	7,000	825	11,000	520	0	0	13,865	5,450
1976	27,782	11,700	7,600	1,002	12,000	589	0	0	12,273	6,071
1977	11,202	5,075	0	1,109	0	111	80	0	24,833	8,996
1978	44,137	11,362	10,084	1,209	15,300	208	0	0	4,055	7,771
1979	60,493	19,145	10,063	1,260	15,000	133	4,000	0	18	290
1980	72,407	15,092	10,884	1,239	17,000	191	4,000	0	0	1,085
1981	79,375	18,461	12,105	1,485	19,000	1,270	4,000	0	16,021	3,619
1982	50,291	22,216	13,326	1,238	21,000	0	10,500	0	8,409	12,599
1983	32,961	22,135	14,547	911	23,000	38	0	0	5,994	734
1984	32,662	24,218	15,768	1,128	25,000	1	0	0	5,556	7,656
1985	37,064	24,500	16,989	1,422	27,000	0	0	1,558	7,390	5,028
1986	32,449	27,229	18,210	1,506	29,000	163	0	3,096	6,421	9,454
1987	34,094	27,988	19,431	1,849	31,500	1,080	17	5,379	18,751	10,630
1988	34,079	30,438	20,652	2,006	34,000	419	9	1,770	21,386	8,948
1989	45,280	36,364	21,873	2,170	36,500	971	200	9,009	20,782	12,839
1990	47,206	28,579	23,100	1,827	38,100	1,747	0	8,608	18,831	16,649
1991	9,568	4,562	6,930	849	11,430	522	3,423	3,914	3,661	5,399
1992	30,265	20,699	10,427	519	17,197	251	10,686	4,035	3,358	7,908
1993	43,102	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	56,276	32,500	62,219	485	102,622	494	7,427	11,410	6,064	15,989
1997	62,212	27,712	68,340	651	69,990	444	14,043	11,861	11,859	18,175
1998	66,167	35,700	23,100	1,950	38,100	2,290	15,000	17,300	102,600	18,000
1999	72,359	38,000	23,100	1,950	38,100	2,290	20,000	17,300	53,600	28,800
2000	75,725	40,530	23,100	1,950	38,100	2,300	20,000	17,300	57,500	16,000
2001	78,835	43,316	23,100	1,950	38,100	2,300	20,000	17,300	60,700	16,400
2002	82,395	46,374	23,100	1,950	38,100	2,300	20,000	17,300	64,200	16,000
2003	84,500	49,742	23,100	2,150	38,100	2,300	20,000	17,300	102,600	28,800
2004	88,300	53,446	23,100	2,350	38,100	2,300	25,000	17,300	102,600	28,800
2005	92,250	54,200	23,100	2,550	38,100	2,300	30,000	17,300	102,600	28,800
2006	96,400	54,200	23,100	2,710	38,100	2,300	35,000	17,300	102,600	28,800
2007	100,750	54,200	23,100	2,910	38,100	2,300	40,000	17,300	102,600	28,800
2008	105,275	54,200	23,100	3,110	38,100	2,300	45,000	17,300	102,600	28,800
2009	110,000	54,200	23,100	3,310	38,100	2,300	50,000	17,300	102,600	28,800
2010	114,975	54,200	23,100	3,350	38,100	2,300	55,000	17,300	102,600	28,800
2011	120,150	54,200	23,100	3,540	38,100	2,300	60,000	17,300	102,600	28,800
2012	125,555	54,200	23,100	3,730	38,100	2,300	65,000	17,300	102,600	28,800
2013	131,200	54,200	23,100	3,920	38,100	2,300	70,000	17,300	102,600	28,800
2014	137,100	54,200	23,100	4,110	38,100	2,300	75,800	17,300	102,600	28,800
2015	138,400	54,200	23,100	4,300	38,100	2,300	75,800	17,300	102,600	28,800
2016	138,400	54,200	23,100	4,440	38,100	2,300	75,800	17,300	102,600	28,800
2017	138,400	54,200	23,100	4,580	38,100	2,300	75,800	17,300	102,600	28,800
2018	138,400	54,200	23,100	4,720	38,100	2,300	75,800	17,300	102,600	28,800
2019	138,400	54,200	23,100	4,860	38,100	2,300	75,800	17,300	102,600	28,800
2020	138,400	54,200	23,100	5,000	38,100	2,300	75,800	17,300	102,600	28,800
2021	138,400	54,200	23,100	5,090	38,100	2,300	75,800	17,300	102,600	28,800
2022	138,400	54,200	23,100	5,180	38,100	2,300	75,800	17,300	102,600	28,800
2023	138,400	54,200	23,100	5,270	38,100	2,300	75,800	17,300	102,600	28,800
2024	138,400	54,200	23,100	5,360	38,100	2,300	75,800	17,300	102,600	28,800
2025	138,400	54,200	23,100	5,450	38,100	2,300	75,800	17,300	102,600	28,800
2026	138,400	54,200	23,100	5,500	38,100	2,300	75,800	17,300	102,600	28,800
2027	138,400	54,200	23,100	5,550	38,100	2,300	75,800	17,300	102,600	28,800
2028	138,400	54,200	23,100	5,600	38,100	2,300	75,800	17,300	102,600	28,800
2029	138,400	54,200	23,100	5,650	38,100	2,300	75,800	17,300	102,600	28,800
2030	138,400	54,200	23,100	5,700	38,100	2,300	75,800	17,300	102,600	28,800
2031	138,400	54,200	23,100	5,720	38,100	2,300	75,800	17,300	102,600	28,800
2032	138,400	54,200	23,100	5,740	38,100	2,300	75,800	17,300	102,600	28,800
2033	138,400	54,200	23,100	5,760	38,100	2,300	75,800	17,300	102,600	28,800
2034	138,400	54,200	23,100	5,780	38,100	2,300	75,800	17,300	102,600	28,800
2035	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
Total	5,537,080	2,559,300	1,319,850	186,343	2,121,896	99,872	2,353,142	741,180	3,998,425	1,254,051

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)

	Southern California Area (continued)				Feather River Area					
Calendar Year	San Gorgonio Pass Water Agency (30)	The Metropolitan Water District Of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City Of Yuba City (34)	County Of Butte (35)	Plumas County Fc&wcd (36)	Total (37)	South Bay Area Future Contractor (38)	GRAND TOTAL (39)
1962	0	0	0	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	0	0	0	56,763
1968	0	0	0	7,382	0	0	0	0	0	294,457
1969	0	0	0	9,970	0	0	0	0	0	268,104
1970	0	0	0	11,739	0	0	70	70	0	369,459
1971	0	0	0	12,490	0	192	64	256	0	654,442
1972	0	71,938	0	88,028	0	186	505	691	0	1,037,770
1973	0	159,883	0	217,226	0	53	679	732	0	737,532
1974	0	277,717	0	323,334	0	127	648	775	0	878,947
1975	0	526,491	0	583,919	0	253	405	658	0	1,230,830
1976	0	618,451	0	697,468	0	527	382	909	0	1,380,124
1977	0	189,755	0	241,161	0	706	303	1,009	0	582,381
1978	0	507,565	0	601,691	0	579	278	857	0	1,458,733
1979	0	477,074	0	587,476	0	302	329	631	0	1,666,457
1980	0	531,727	0	653,625	0	267	295	562	0	1,530,256
1981	0	795,846	0	951,182	0	221	355	576	0	1,918,563
1982	0	691,192	0	830,771	0	334	305	639	0	1,750,123
1983	0	343,521	0	443,841	0	325	262	587	0	1,187,156
1984	0	457,582	0	569,571	108	177	272	557	0	1,591,372
1985	0	683,625	0	804,576	62	308	254	624	0	1,990,295
1986	0	708,840	0	836,368	328	313	317	958	0	1,999,155
1987	0	712,424	0	863,143	88	459	452	999	0	2,131,607
1988	0	902,564	0	1,056,271	303	385	523	1,211	0	2,385,421
1989	0	1,156,698	0	1,342,686	403	300	486	1,189	0	2,853,747
1990	0	1,396,423	4,836	1,585,906	494	380	548	1,422	0	2,582,151
1991	0	391,447	988	442,693	265	328	420	1,013	0	549,113
1992	0	710,313	0	815,658	642	117	485	1,244	0	1,471,454
1993	0	652,190	0	818,737	746	256	444	1,446	0	2,315,235
1994	0	807,866	0	972,337	1,032	329	492	1,853	0	1,861,973
1995	0	436,042	0	601,951	910	203	308	1,421	0	2,031,423
1996	0	593,380	0	888,866	820	365	360	1,545	0	2,543,330
1997	0	723,660	0	1,008,947	1,005	178	231	1,414	0	2,407,742
1998	0	1,359,450	10,000	1,689,657	2,400	1,200	1,400	5,000	0	3,232,207
1999	1,200	1,602,850	10,000	1,909,549	2,800	1,200	1,450	5,450	0	3,476,089
2000	3,000	1,712,650	10,000	2,018,155	2,800	1,200	1,510	5,510	0	3,578,430
2001	3,600	1,712,650	10,000	2,028,251	2,800	1,200	1,570	5,570	0	3,589,829
2002	4,800	1,546,650	10,000	1,873,169	2,800	1,200	1,630	5,630	0	3,427,313
2003	5,200	1,573,150	20,000	1,966,942	9,600	27,500	1,708	38,808	0	3,592,336
2004	5,200	1,598,150	20,000	2,004,646	9,600	27,500	1,786	38,886	0	3,631,168
2005	6,500	1,623,150	20,000	2,040,850	9,600	27,500	1,864	38,964	0	3,668,100
2006	7,000	1,648,150	20,000	2,075,660	9,600	27,500	1,942	39,042	0	3,703,488
2007	7,500	1,673,150	20,000	2,110,710	9,600	27,500	2,020	39,120	0	3,739,316
2008	17,300	1,698,150	20,000	2,155,235	9,600	27,500	2,080	39,180	0	3,784,501
2009	17,300	1,723,150	20,000	2,190,160	9,600	27,500	2,140	39,240	0	3,820,086
2010	17,300	1,748,150	20,000	2,225,175	9,600	27,500	2,200	39,300	0	3,855,761
2011	17,300	1,773,150	20,000	2,260,540	9,600	27,500	2,260	39,360	0	3,891,886
2012	17,300	1,798,150	20,000	2,296,135	9,600	27,500	2,320	39,420	0	3,928,141
2013	17,300	1,823,150	20,000	2,331,970	9,600	27,500	2,396	39,496	0	3,964,752
2014	17,300	1,848,150	20,000	2,368,860	9,600	27,500	2,472	39,572	0	4,002,418
2015	17,300	1,873,150	20,000	2,395,350	9,600	27,500	2,548	39,648	0	4,029,684
2016	17,300	1,898,150	20,000	2,420,490	9,600	27,500	2,624	39,724	0	4,055,500
2017	17,300	1,923,150	20,000	2,445,630	9,600	27,500	2,700	39,800	0	4,081,316
2018	17,300	1,948,150	20,000	2,470,770	9,600	27,500	2,700	39,800	0	4,107,056
2019	17,300	1,973,150	20,000	2,495,910	9,600	27,500	2,700	39,800	0	4,132,796
2020	17,300	1,998,150	20,000	2,521,050	9,600	27,500	2,700	39,800	0	4,158,536
2021	17,300	2,011,500	20,000	2,534,490	9,600	27,500	2,700	39,800	0	4,172,076
2022	17,300	2,011,500	20,000	2,534,580	9,600	27,500	2,700	39,800	0	4,172,166
2023	17,300	2,011,500	20,000	2,534,670	9,600	27,500	2,700	39,800	0	4,172,256
2024	17,300	2,011,500	20,000	2,534,760	9,600	27,500	2,700	39,800	0	4,172,346
2025	17,300	2,011,500	20,000	2,534,850	9,600	27,500	2,700	39,800	0	4,172,436
2026	17,300	2,011,500	20,000	2,534,900	9,600	27,500	2,700	39,800	0	4,172,486
2027	17,300	2,011,500	20,000	2,534,950	9,600	27,500	2,700	39,800	0	4,172,536
2028	17,300	2,011,500	20,000	2,535,000	9,600	27,500	2,700	39,800	0	4,172,586
2029	17,300	2,011,500	20,000	2,535,050	9,600	27,500	2,700	39,800	0	4,172,636
2030	17,300	2,011,500	20,000	2,535,100	9,600	27,500	2,700	39,800	0	4,172,686
2031	17,300	2,011,500	20,000	2,535,120	9,600	27,500	2,700	39,800	0	4,172,706
2032	17,300	2,011,500	20,000	2,535,140	9,600	27,500	2,700	39,800	0	4,172,726
2033	17,300	2,011,500	20,000	2,535,160	9,600	27,500	2,700	39,800	0	4,172,746
2034	17,300	2,011,500	20,000	2,535,180	9,600	27,500	2,700	39,800	0	4,172,766
2035	17,300	2,011,500	20,000	2,535,200	9,600	27,500	2,700	39,800	0	4,172,786
Total	528,400	85,772,664	715,824	107,188,027	337,606	921,670	99,692	1,358,968	0	195,886,165

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 WA				Cordelia Pumping Plant Napa County FC&WCD			
	Initial Fill Water (1)	Operational Losses (2)	Water Supply Delivery (3)	Total (4)	Initial Fill Water (5)	Operational Losses (6)	Water Supply Delivery (7)	Total (8)	Initial Fill Water (9)	Operational Losses (10)	Water Supply Delivery (a (11)	Total (12)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	24	(10)	1,214	1,228
1969	0	0	0	0	0	0	0	0	0	2	2,687	2,689
1970	0	0	0	0	0	0	0	0	0	18	3,618	3,636
1971	0	0	0	0	0	0	0	0	0	4	2,521	2,525
1972	0	0	0	0	0	0	0	0	0	(10)	3,647	3,637
1973	0	0	0	0	0	0	0	0	0	1	3,792	3,793
1974	0	0	0	0	0	0	0	0	0	10	4,870	4,880
1975	0	0	0	0	0	0	0	0	0	10	6,840	6,850
1976	0	0	0	0	0	0	0	0	0	4	7,122	7,126
1977	0	0	0	0	0	0	0	0	0	2	8,226	8,228
1978	0	0	0	0	0	0	0	0	0	(6)	6,034	6,028
1979	0	0	0	0	0	0	0	0	0	1	6,561	6,562
1980	0	0	0	0	0	0	0	0	0	(3)	6,707	6,704
1981	0	0	0	0	0	0	0	0	0	8	9,001	9,009
1982	0	0	0	0	0	0	0	0	0	(8)	1,213	1,205
1983	0	0	0	0	0	0	0	0	0	(12)	2,287	2,275
1984	0	0	0	0	0	0	0	0	0	(15)	2,923	2,908
1985	0	0	0	0	0	0	0	0	0	13	4,039	4,052
1986	0	0	0	0	0	0	0	0	0	(4)	3,519	3,515
1987	0	0	0	0	0	0	0	0	0	0	7,693	7,693
1988	0	283	15,118	15,401	0	6	9,725	9,731	0	(1)	5,392	5,391
1989	0	758	23,451	24,209	0	0	17,246	17,246	0	(4)	6,195	6,191
1990	0	637	26,071	26,708	0	0	15,856	15,856	0	3	6,940	6,943
1991	0	661	8,352	9,013	0	0	3,855	3,855	0	192	1,380	1,572
1992	0	1,640	18,774	20,414	0	0	9,220	9,220	0	(3)	4,001	3,998
1993	0	1,154	34,466	35,620	0	0	14,471	14,471	0	1	5,286	5,287
1994	0	780	32,048	32,828	0	0	14,913	14,913	0	0	6,792	6,792
1995	0	908	26,527	27,435	0	0	15,893	15,893	0	0	5,182	5,182
1996	0	1,354	34,892	36,246	0	0	17,069	17,069	0	0	4,893	4,893
1997	0	1,421	36,421	37,842	0	29	16,613	16,642	0	175	4,363	4,538
1998	0	51	42,960	43,011	0	5	17,250	17,255	0	5	11,710	11,715
1999	0	51	51,500	51,551	0	5	18,070	18,075	0	5	12,330	12,335
2000	0	51	52,720	52,771	0	5	18,470	18,475	0	5	13,050	13,055
2001	0	51	53,895	53,946	0	5	18,880	18,885	0	5	13,665	13,670
2002	0	51	46,391	46,442	0	5	18,150	18,155	0	5	14,185	14,190
2003	0	51	55,800	55,851	0	5	19,700	19,705	0	5	14,800	14,805
2004	0	51	56,850	56,901	0	5	20,100	20,105	0	5	15,400	15,405
2005	0	51	57,500	57,551	0	5	20,100	20,105	0	5	16,000	16,005
2006	0	51	58,000	58,051	0	5	20,100	20,105	0	5	16,450	16,455
2007	0	51	58,700	58,751	0	5	20,100	20,105	0	5	17,100	17,105
2008	0	51	59,300	59,351	0	5	20,100	20,105	0	5	17,650	17,655
2009	0	51	59,900	59,951	0	5	20,100	20,105	0	5	18,200	18,205
2010	0	51	60,500	60,551	0	5	20,100	20,105	0	5	18,750	18,755
2011	0	51	61,200	61,251	0	5	20,100	20,105	0	5	19,400	19,405
2012	0	51	61,800	61,851	0	5	20,100	20,105	0	5	19,950	19,955
2013	0	51	62,500	62,551	0	5	20,100	20,105	0	5	20,600	20,605
2014	0	51	63,200	63,251	0	5	20,100	20,105	0	5	21,250	21,255
2015	0	51	63,900	63,951	0	5	20,100	20,105	0	5	21,900	21,905
2016	0	51	64,500	64,551	0	5	20,100	20,105	0	5	22,500	22,505
2017	0	51	65,100	65,151	0	5	20,100	20,105	0	5	23,100	23,105
2018	0	51	65,700	65,751	0	5	20,100	20,105	0	5	23,700	23,705
2019	0	51	66,300	66,351	0	5	20,100	20,105	0	5	24,300	24,305
2020	0	51	66,900	66,951	0	5	20,100	20,105	0	5	24,900	24,905
2021	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2022	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2023	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2024	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2025	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2026	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2027	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2028	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2029	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2030	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2031	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2032	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2033	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2034	0	51	67,000	67,051	0	5	20,100	20,105	0	5	25,000	25,005
2035	0	51	67,000	67,051	0	5	20,100	20,105	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)

	South Bay Aqueduct						California Aqueduct							
							North San Joaquin Division							
	South Bay Pumping Plant						Banks Pumping Plant							
				Deliveries			Transportation Water							
Calendar Year	Initial Fill Water (13)	Operational Losses (14)	Reservation Storage Changes (15)	Water Supply (b (16)	Recreation (17)	Total (18)	Initial Fill Water (19)	Opera-tional Losses (20)	Reservoir Storage Changes (21)	Deliveries Water Supply (22)	Deliveries Recrea-tion (23)	Total (24)	Conser-vation Water (25)	Total (26)
1961	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	9	272	0	8,906	0	9,187	0	0	0	0	0	0	0	0
1963	71	185	0	12,645	0	12,901	0	0	0	0	0	0	0	0
1964	171	152	0	20,911	0	21,234	0	0	0	0	0	0	0	0
1965	93	729	0	34,026	0	34,848	0	0	0	0	0	0	0	0
1966	0	1,746	0	54,913	0	56,659	0	0	0	0	0	0	0	0
1967	0	1,677	0	56,763	0	58,440	5,746	1,183	0	11,538	0	18,467	2,957	21,424
1968	0	1,847	0	101,055	0	102,902	11,079	74,464	0	293,243	0	378,786	531,275	910,061
1969	3,449	2,668	0	69,712	0	75,829	7,336	44,287	0	265,417	0	317,040	531,185	848,225
1970	16,279	1,086	(5,355)	89,560	0	101,570	23,947	20,767	(5,355)	365,771	0	405,130	(12,995)	392,135
1971	0	1,815	8,854	98,584	0	109,253	23,207	(10,754)	8,854	651,665	8	672,980	7,708	680,688
1972	0	3,557	2,273	138,426	0	144,256	145,066	9,057	(4,285)	1,033,432	6,489	1,189,759	48,300	1,238,059
1973	0	(33)	(1,510)	94,078	0	92,535	214,941	(4,951)	2,902	733,008	1,155	947,055	55,846	1,002,901
1974	0	1,287	(10,056)	89,318	0	80,549	247,894	(11,526)	(32,510)	873,302	2,118	1,079,278	54,683	1,133,961
1975	0	320	8,550	93,604	0	102,474	110,149	(8,092)	16,101	1,223,332	3,377	1,344,867	(102,625)	1,242,242
1976	0	2,431	1,391	126,431	141	130,394	67,834	5,443	(244,124)	1,372,093	1,745	1,202,991	(442,348)	760,643
1977	0	2,866	2,685	107,704	112	113,367	0	39,897	(157,543)	573,146	1,111	456,611	(13,507)	443,104
1978	0	2,165	(11,249)	112,574	126	103,616	67,457	(36,898)	35,129	1,451,842	1,177	1,518,707	752,075	2,270,782
1979	0	2,401	1,069	122,190	89	125,749	17,397	60,958	(32,307)	1,659,265	1,398	1,706,711	(112,053)	1,594,658
1980	0	1,758	(6,563)	115,824	123	111,142	3,159	58,484	(275,538)	1,529,187	2,131	1,317,423	186,601	1,504,024
1981	0	2,627	13,742	129,507	121	145,997	46,060	85,350	40,536	1,908,986	4,974	2,085,906	(931,878)	1,154,028
1982	0	2,344	(23,928)	107,439	129	85,984	5,979	61,556	99,897	1,743,145	4,646	1,915,223	347,983	2,263,206
1983	0	2,151	(22,886)	94,656	132	74,053	6,071	47,022	(310,477)	1,184,282	7,853	934,751	835,771	1,770,522
1984	0	2,088	8,442	98,122	158	108,810	38,649	97,143	(108,548)	1,587,936	5,874	1,621,054	21,875	1,642,929
1985	0	2,817	(1,607)	122,088	152	123,450	0	110,469	137,783	1,985,632	5,452	2,239,336	(110,569)	2,128,767
1986	0	2,299	(1,850)	110,988	130	111,567	0	90,799	20,177	1,993,278	3,865	2,108,119	200,298	2,308,417
1987	0	2,625	(584)	136,796	137	138,974	0	91,428	(23,116)	2,121,366	7,672	2,197,350	(458,725)	1,738,625
1988	0	2,884	(698)	147,255	142	149,583	0	107,250	(35,484)	2,368,793	4,889	2,445,448	(303,583)	2,141,865
1989	0	2,673	3,296	142,269	152	148,390	0	117,603	(38,058)	2,829,107	8,135	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	539,984	4,879	890,192	210,643	1,100,835
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	3,903	1,952,420	(417,358)	1,535,062
1995	0	1,188	(12,333)	76,640	146	65,641	0	173,074	(334,999)	2,003,475	2,575	1,844,125	230,553	2,074,678
1996	0	981	(1,990)	77,215	150	76,356	0	123,502	79,011	2,333,490	3,014	2,539,017	288,576	2,827,593
1997	0	3,310	(4,068)	110,419	218	109,879	0	165,507	29,407	2,280,580	4,517	2,480,011	(41,052)	2,438,959
1998	0	3,250	(3,021)	146,963	400	147,592	0	77,974	7,120	3,173,147	8,524	3,266,765	(78,805)	3,187,960
1999	0	3,223	2,009	180,500	400	186,132	0	78,035	2,112	3,419,139	8,526	3,507,812	(259,572)	3,248,240
2000	0	3,224	(93)	180,500	400	184,031	0	78,036	8	3,520,200	8,530	3,606,774	81,110	3,687,884
2001	0	3,403	0	180,510	400	184,313	0	102,987	(106,390)	3,530,364	8,532	3,535,493	(26,230)	3,509,263
2002	0	3,436	0	180,500	400	184,336	0	103,841	73,467	3,375,292	9,375	3,561,975	107,199	3,669,174
2003	0	3,334	0	188,000	400	191,734	0	103,862	25,333	3,497,728	8,460	3,635,383	49,084	3,684,467
2004	0	3,334	0	188,000	400	191,734	0	103,164	(88,850)	3,535,432	8,460	3,558,206	(188,120)	3,370,086
2005	0	3,334	0	188,000	400	191,734	0	103,503	36,973	3,571,636	8,460	3,720,572	150,642	3,871,214
2006	0	3,334	0	188,000	400	191,734	0	103,900	(2,330)	3,606,446	8,460	3,716,476	(268,123)	3,448,353
2007	0	3,334	0	188,000	400	191,734	0	104,003	3,021	3,641,496	8,460	3,756,980	36,707	3,793,687
2008	0	3,334	0	188,000	400	191,734	0	103,323	62,335	3,686,021	8,460	3,860,139	409,117	4,269,256
2009	0	3,334	0	188,000	400	191,734	0	103,086	(73,091)	3,720,946	8,460	3,759,401	(317,000)	3,442,401
2010	0	3,334	0	188,000	400	191,734	0	102,993	16,796	3,755,961	8,460	3,884,210	154,741	4,038,951
2011	0	3,334	0	188,000	400	191,734	0	103,073	8,867	3,791,326	8,460	3,911,726	(71,509)	3,840,217
2012	0	3,334	0	188,000	400	191,734	0	103,168	3,768	3,826,921	8,460	3,942,317	78,593	4,020,910
2013	0	3,334	0	188,000	400	191,734	0	103,157	5,221	3,862,756	8,460	3,979,594	(9,010)	3,970,584
2014	0	3,334	0	188,000	400	191,734	0	103,135	3,432	3,899,646	8,460	4,014,673	7,254	4,021,927
2015	0	3,334	0	188,000	400	191,734	0	103,170	11,797	3,926,136	8,460	4,049,563	(45,038)	4,004,525
2016	0	3,334	0	188,000	400	191,734	0	103,414	(14,091)	3,951,276	8,460	4,049,059	78,296	4,127,355
2017	0	3,334	0	188,000	400	191,734	0	103,357	19,272	3,976,416	8,460	4,107,505	(129,130)	3,978,375
2018	0	3,334	0	188,000	400	191,734	0	103,455	3,436	4,001,556	8,460	4,116,907	132,469	4,249,376
2019	0	3,334	0	188,000	400	191,734	0	103,557	(2,802)	4,026,696	8,460	4,135,911	(185)	4,135,726
2020	0	3,334	0	188,000	400	191,734	0	103,763	18,528	4,051,836	8,460	4,182,587	(128,762)	4,053,825
2021	0	3,334	0	188,000	400	191,734	0	104,958	(17,295)	4,065,276	8,460	4,161,399	(155,283)	4,006,116
2022	0	3,334	0	188,000	400	191,734	0	103,201	5,121	4,065,366	8,460	4,182,148	231,596	4,413,744
2023	0	3,334	0	188,000	400	191,734	0	103,720	15,907	4,065,456	8,460	4,193,543	68,204	4,261,747
2024	0	3,334	0	188,000	400	191,734	0	103,143	(31,483)	4,065,546	8,460	4,145,666	(39,610)	4,106,056
2025	0	3,334	0	188,000	400	191,734	0	103,166	39,292	4,065,636	8,460	4,216,554	839	4,217,393
2026	0	3,334	0	188,000	400	191,734	0	105,000	(33,359)	4,065,686	8,460	4,145,787	(231,746)	3,914,041
2027	0	3,334	0	188,000	400	191,734	0	105,075	10,267	4,065,736	8,460	4,189,538	9,220	4,198,758
2028	0	3,334	0	188,000	400	191,734	0	103,002	3,995	4,065,786	8,460	4,181,243	223,881	4,405,124
2029	0	3,334	0	188,000	400	191,734	0	103,442	7,964	4,065,836	8,460	4,185,702	72,868	4,258,570
2030	0	3,334	0	188,000	400	191,734	0	103,736	(17,556)	4,065,886	8,460	4,160,526	(7,193)	4,153,333
2031	0	3,334	0	188,000	400	191,734	0	103,821	25,695	4,065,906	8,460	4,203,882	148,651	4,352,533
2032	0	3,334	0	188,000	400	191,734	0	102,884	(37,642)	4,065,926	8,460	4,139,628	(260,311)	3,879,317
2033	0	3,334	0	188,000	400	191,734	0	103,569	29,926	4,065,946	8,460	4,207,901	132,517	4,340,418
2034	0	3,334	0	188,000	400	191,734	0	103,220	(8,755)	4,065,966	8,460	4,168,891	(121,365)	4,047,526
2035	0	3,334	0	188,000	400	191,734	0	103,518	(7,923)	4,065,986	8,460	4,170,041	98,548	4,268,589

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					
	Initial Fill Water (27)	Operational Losses (28)	Reservoir Storage Changes (29)	Deliveries		Total (32)	Initial Fill Water (33)	Operational Losses (34)	Reservoir Storage Changes (35)	Deliveries		Total (38)
				Water Supply (30)	Recreation (31)					Water Supply (36)	Recreation (37)	
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	11,079	25,126	0	189,104	0	225,309	0	0	0	0	0	0
1969	3,887	9,922	0	192,689	0	206,498	0	0	0	0	0	0
1970	7,668	1,901	0	270,300	0	279,869	4,779	1,012	0	3	0	5,794
1971	23,207	(12,030)	0	545,869	0	557,046	7,853	8,399	0	101,512	0	117,764
1972	145,066	(6,635)	(6,558)	886,840	6,481	1,025,194	100,274	20,044	(6,558)	223,626	6,481	343,867
1973	214,941	(6,778)	1,329	635,716	1,147	846,355	204,638	35,695	1,329	311,096	1,147	553,905
1974	247,894	(16,765)	(15,295)	780,513	2,108	998,455	237,554	19,672	(15,295)	388,949	2,108	632,988
1975	110,149	(12,144)	(693)	1,126,152	3,358	1,226,822	103,352	26,342	(693)	672,531	3,358	804,890
1976	67,834	(456)	(152,171)	1,241,550	1,581	1,158,338	61,122	29,428	(152,171)	785,055	1,581	725,015
1977	0	26,359	(116,219)	463,970	737	374,847	0	25,173	(116,219)	271,944	560	181,458
1978	67,457	1,905	79,308	1,335,362	680	1,484,712	65,027	17,751	121,904	762,043	674	967,399
1979	17,397	33,884	(51,299)	1,530,926	685	1,531,593	12,302	46,157	(51,299)	737,714	502	745,376
1980	3,159	34,391	(272,825)	1,407,663	1,514	1,173,902	0	49,025	(134,009)	778,059	1,262	694,337
1981	46,060	36,962	23,359	1,775,179	4,348	1,885,908	0	38,942	23,359	1,077,322	4,112	1,143,735
1982	5,979	57,146	116,086	1,631,868	4,205	1,815,284	0	29,059	117,174	990,863	4,045	1,141,141
1983	6,071	63,583	(101,155)	1,085,804	7,475	1,061,778	0	40,205	(101,155)	593,920	7,291	540,261
1984	38,649	109,263	(112,744)	1,484,114	5,391	1,524,673	0	38,487	(114,984)	781,955	5,244	710,702
1985	0	86,772	138,898	1,858,111	4,936	2,088,717	0	42,838	139,689	992,606	4,804	1,179,937
1986	0	51,963	19,989	1,877,183	3,426	1,952,561	0	36,751	37,546	1,014,294	3,285	1,091,876
1987	0	64,828	(25,707)	1,978,945	7,121	2,025,187	0	30,495	(25,522)	1,027,361	6,937	1,039,271
1988	0	72,680	(34,592)	2,217,126	4,490	2,259,704	0	38,804	(29,747)	1,244,196	4,360	1,257,613
1989	0	90,090	(29,411)	2,679,845	7,652	2,748,176	0	29,594	(60,826)	1,532,625	7,490	1,508,883
1990	0	118,316	(15,942)	2,394,999	8,922	2,506,295	0	46,865	(14,959)	1,769,991	8,879	1,810,776
1991	0	922,227	9,325	489,584	4,605	1,425,741	0	39,274	96,506	447,152	4,560	587,492
1992	0	118,796	(225,603)	1,372,536	2,079	1,267,808	0	28,138	(98,271)	920,978	1,995	852,840
1993	0	136,432	(220,537)	2,170,494	1,864	2,088,253	0	14,186	(128,363)	908,200	1,676	795,699
1994	0	152,414	(78,957)	1,724,433	3,083	1,800,973	0	35,083	(88,211)	1,107,122	2,918	1,056,912
1995	0	137,937	(12,473)	1,921,666	1,711	2,048,841	0	33,963	(16,431)	706,742	1,669	725,943
1996	0	45,591	15,815	2,251,371	2,110	2,314,887	0	31,303	16,326	886,227	2,040	935,896
1997	0	102,577	37,765	2,164,851	3,934	2,309,127	0	46,084	35,182	1,075,984	3,920	1,161,170
1998	0	61,663	10,141	3,031,584	7,010	3,110,398	0	45,694	10,141	1,746,752	7,010	1,809,597
1999	0	61,751	103	3,232,939	7,010	3,301,803	0	45,782	103	2,097,849	7,010	2,150,744
2000	0	61,751	101	3,334,000	7,010	3,402,862	0	45,782	101	2,206,455	7,010	2,259,348
2001	0	56,967	(106,390)	3,344,154	7,010	3,301,741	0	40,998	(106,390)	2,216,551	7,010	2,158,169
2002	0	56,974	73,467	3,189,092	7,010	3,326,543	0	41,005	73,467	2,061,469	7,010	2,182,951
2003	0	57,112	25,333	3,304,028	7,010	3,393,483	0	41,143	25,333	2,166,996	7,010	2,240,482
2004	0	56,718	(88,850)	3,341,732	7,010	3,316,610	0	40,749	(88,850)	2,204,700	7,010	2,163,609
2005	0	56,717	36,973	3,377,936	7,010	3,478,636	0	40,748	36,973	2,244,224	7,010	2,328,955
2006	0	56,673	(2,330)	3,412,746	7,010	3,474,099	0	40,704	(2,330)	2,283,517	7,010	2,328,901
2007	0	56,771	3,021	3,447,796	7,010	3,514,598	0	40,802	3,021	2,323,464	7,010	2,374,297
2008	0	57,047	62,335	3,492,321	7,010	3,618,713	0	41,078	62,335	2,367,989	7,010	2,478,412
2009	0	57,028	(73,091)	3,527,246	7,010	3,518,193	0	41,059	(73,091)	2,402,914	7,010	2,377,892
2010	0	56,920	16,796	3,562,261	7,010	3,642,987	0	40,951	16,796	2,437,929	7,010	2,502,686
2011	0	56,998	8,867	3,597,626	7,010	3,670,501	0	41,029	8,867	2,473,294	7,010	2,530,200
2012	0	57,077	3,768	3,633,221	7,010	3,701,076	0	41,108	3,768	2,508,889	7,010	2,560,775
2013	0	57,073	5,221	3,669,056	7,010	3,738,360	0	41,104	5,221	2,544,724	7,010	2,598,059
2014	0	57,063	3,432	3,705,946	7,010	3,773,451	0	41,094	3,432	2,581,614	7,010	2,633,150
2015	0	57,175	11,797	3,732,436	7,010	3,808,418	0	41,206	11,797	2,608,104	7,010	2,668,117
2016	0	57,155	(14,091)	3,757,576	7,010	3,807,650	0	41,186	(14,091)	2,633,244	7,010	2,667,349
2017	0	57,201	19,272	3,782,716	7,010	3,866,199	0	41,232	19,272	2,658,384	7,010	2,725,898
2018	0	57,173	3,436	3,807,856	7,010	3,875,475	0	41,204	3,436	2,683,524	7,010	2,735,174
2019	0	57,286	(2,802)	3,832,996	7,010	3,894,490	0	41,317	(2,802)	2,708,664	7,010	2,754,189
2020	0	57,681	18,528	3,858,136	7,010	3,941,355	0	41,712	18,528	2,733,804	7,010	2,801,054
2021	0	57,464	(17,295)	3,871,576	7,010	3,918,755	0	41,495	(17,295)	2,747,244	7,010	2,778,454
2022	0	57,400	5,121	3,871,666	7,010	3,941,197	0	41,431	5,121	2,747,334	7,010	2,800,896
2023	0	57,452	15,907	3,871,756	7,010	3,952,125	0	41,483	15,907	2,747,424	7,010	2,811,824
2024	0	57,560	(31,483)	3,871,846	7,010	3,904,933	0	41,591	(31,483)	2,747,514	7,010	2,764,632
2025	0	57,576	39,292	3,871,936	7,010	3,975,814	0	41,607	39,292	2,747,604	7,010	2,835,513
2026	0	57,494	(33,359)	3,871,986	7,010	3,903,131	0	41,525	(33,359)	2,747,654	7,010	2,762,830
2027	0	57,546	10,267	3,872,036	7,010	3,946,859	0	41,577	10,267	2,747,704	7,010	2,806,558
2028	0	57,317	3,995	3,872,086	7,010	3,940,408	0	41,348	3,995	2,747,754	7,010	2,800,107
2029	0	57,328	7,964	3,872,136	7,010	3,944,438	0	41,359	7,964	2,747,804	7,010	2,804,137
2030	0	57,393	(17,556)	3,872,186	7,010	3,919,033	0	41,424	(17,556)	2,747,854	7,010	2,778,732
2031	0	57,388	25,695	3,872,206	7,010	3,962,299	0	41,419	25,695	2,747,874	7,010	2,821,998
2032	0	57,410	(37,642)	3,872,226	7,010	3,899,004	0	41,441	(37,642)	2,747,894	7,010	2,758,703
2033	0	57,365	29,926	3,872,246	7,010	3,966,547	0	41,396	29,926	2,747,914	7,010	2,826,246
2034	0	57,465	(8,755)	3,872,266	7,010	3,927,986	0	41,496	(8,755)	2,747,934	7,010	2,787,685
2035	0	57,163	(7,923)	3,872,286	7,010	3,928,536	0	41,194	(7,923)	2,747,954	7,010	2,788,235

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

	California Aqueduct (continued)											
	South San Joaquin Division (continued)											
	Teerink Pumping Plant						Chrisman Pumping Plant					
				Deliveries						Deliveries		
Calendar Year	Initial Fill Water (39)	Operational Losses (40)	Reservoir Storage Changes (41)	Water Supply (42)	Recreation (43)	Total (44)	Initial Fill Water (45)	Operational Losses (46)	Reservoir Storage Changes (47)	Water Supply (48)	Recreation (49)	Total (50)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	198	2	0	0	0	200	0	0	0	0	0	0
1971	7,533	(112)	0	3,552	0	10,973	7,366	(159)	0	0	0	7,207
1972	100,274	12,765	(6,558)	84,955	6,481	197,917	100,274	13,160	(6,558)	78,891	6,481	192,248
1973	204,638	21,543	1,329	229,685	1,147	458,342	204,638	32,414	1,329	209,769	1,147	449,297
1974	237,554	11,843	(15,295)	336,198	2,108	572,408	237,554	17,655	(15,295)	318,198	2,108	560,220
1975	103,352	19,763	(693)	621,706	3,358	747,486	103,352	25,326	(693)	586,286	3,358	717,629
1976	61,122	18,552	(152,171)	740,486	1,581	669,570	61,122	21,468	(152,171)	700,935	1,581	632,935
1977	0	16,415	(116,219)	246,349	560	147,105	0	15,698	(116,219)	240,191	560	140,230
1978	65,027	28,820	121,904	631,121	674	847,546	65,027	26,705	121,904	599,973	674	814,283
1979	12,302	50,663	(51,299)	625,561	502	637,729	12,302	50,580	(51,299)	586,959	502	599,044
1980	0	48,825	(134,009)	696,405	1,262	612,483	0	58,085	(134,009)	658,588	1,262	583,926
1981	0	51,600	23,359	998,307	4,112	1,077,378	0	48,844	23,359	959,274	4,112	1,035,589
1982	0	44,353	117,332	878,486	4,045	1,044,216	0	33,541	117,277	830,704	4,045	985,567
1983	0	43,961	(101,155)	487,915	7,291	438,012	0	34,698	(101,155)	450,489	7,291	391,323
1984	0	45,999	(115,088)	632,262	5,244	568,417	0	33,132	(115,092)	582,414	5,244	505,698
1985	0	50,106	139,973	854,684	4,804	1,049,567	0	54,831	139,954	810,606	4,804	1,010,195
1986	0	38,747	37,546	882,300	3,285	961,878	0	41,421	37,546	839,839	3,285	922,091
1987	0	47,815	(25,522)	897,905	6,937	927,135	0	33,195	(25,522)	853,157	6,937	867,767
1988	0	53,815	(29,747)	1,097,643	4,360	1,126,071	0	39,775	(29,747)	1,055,649	4,360	1,070,037
1989	0	49,088	(60,826)	1,382,599	7,490	1,378,351	0	42,307	(60,826)	1,339,358	7,490	1,328,329
1990	0	66,868	(14,959)	1,627,246	8,879	1,688,034	0	56,653	(14,959)	1,590,893	8,879	1,641,466
1991	0	40,564	105,176	446,384	4,560	596,684	0	34,016	105,176	446,384	4,560	590,136
1992	0	31,820	(92,123)	844,376	1,995	786,068	0	34,477	(92,123)	820,133	1,995	764,482
1993	0	27,158	(127,738)	799,143	1,676	700,239	0	28,614	(127,738)	771,146	1,676	673,698
1994	0	50,802	(88,211)	1,007,214	2,918	972,723	0	57,203	(88,211)	977,703	2,918	949,613
1995	0	48,705	(16,431)	2,586,829	1,669	2,620,772	0	36,309	(16,431)	560,695	1,669	582,242
1996	0	58,437	16,326	734,434	2,040	811,237	0	43,710	16,326	698,248	2,040	760,324
1997	0	64,099	34,855	883,836	3,920	986,710	0	72,288	34,846	850,962	3,920	962,016
1998	0	42,064	10,141	1,591,652	7,010	1,650,867	0	41,814	10,141	1,550,952	7,010	1,609,917
1999	0	42,152	103	1,948,749	7,010	1,998,014	0	41,902	103	1,908,049	7,010	1,957,064
2000	0	42,152	101	2,057,355	7,010	2,106,618	0	41,902	101	2,016,655	7,010	2,065,668
2001	0	37,368	(106,390)	2,067,451	7,010	2,005,439	0	37,118	(106,390)	2,026,751	7,010	1,964,489
2002	0	37,375	73,467	1,912,369	7,010	2,030,221	0	37,125	73,467	1,871,669	7,010	1,989,271
2003	0	37,513	25,333	2,020,339	7,010	2,090,195	0	37,263	25,333	1,978,589	7,010	2,048,195
2004	0	37,119	(88,850)	2,058,043	7,010	2,013,322	0	36,869	(88,850)	2,016,293	7,010	1,971,322
2005	0	37,118	36,973	2,097,567	7,010	2,178,668	0	36,868	36,973	2,055,817	7,010	2,136,668
2006	0	37,074	(2,330)	2,136,860	7,010	2,178,614	0	36,824	(2,330)	2,095,110	7,010	2,136,614
2007	0	37,172	3,021	2,176,807	7,010	2,224,010	0	36,922	3,021	2,135,057	7,010	2,182,010
2008	0	37,448	62,335	2,221,332	7,010	2,328,125	0	37,198	62,335	2,179,582	7,010	2,286,125
2009	0	37,429	(73,091)	2,256,257	7,010	2,227,605	0	37,179	(73,091)	2,214,507	7,010	2,185,605
2010	0	37,321	16,796	2,291,272	7,010	2,352,399	0	37,071	16,796	2,249,522	7,010	2,310,399
2011	0	37,399	8,867	2,326,637	7,010	2,379,913	0	37,149	8,867	2,284,887	7,010	2,337,913
2012	0	37,478	3,768	2,362,232	7,010	2,410,488	0	37,228	3,768	2,320,482	7,010	2,368,488
2013	0	37,474	5,221	2,398,067	7,010	2,447,772	0	37,224	5,221	2,356,317	7,010	2,405,772
2014	0	37,464	3,432	2,434,957	7,010	2,482,863	0	37,214	3,432	2,393,207	7,010	2,440,863
2015	0	37,576	11,797	2,461,447	7,010	2,517,830	0	37,326	11,797	2,419,697	7,010	2,475,830
2016	0	37,556	(14,091)	2,486,587	7,010	2,517,062	0	37,306	(14,091)	2,444,837	7,010	2,475,062
2017	0	37,602	19,272	2,511,727	7,010	2,575,611	0	37,352	19,272	2,469,977	7,010	2,533,611
2018	0	37,574	3,436	2,536,867	7,010	2,584,887	0	37,324	3,436	2,495,117	7,010	2,542,887
2019	0	37,687	(2,802)	2,562,007	7,010	2,603,902	0	37,437	(2,802)	2,520,257	7,010	2,561,902
2020	0	38,082	18,528	2,587,147	7,010	2,650,767	0	37,832	18,528	2,545,397	7,010	2,608,767
2021	0	37,865	(17,295)	2,600,587	7,010	2,628,167	0	37,615	(17,295)	2,558,837	7,010	2,586,167
2022	0	37,801	5,121	2,600,677	7,010	2,650,609	0	37,551	5,121	2,558,927	7,010	2,608,609
2023	0	37,853	15,907	2,600,767	7,010	2,661,537	0	37,603	15,907	2,559,017	7,010	2,619,537
2024	0	37,961	(31,483)	2,600,857	7,010	2,614,345	0	37,711	(31,483)	2,559,107	7,010	2,572,345
2025	0	37,977	39,292	2,600,947	7,010	2,685,226	0	37,727	39,292	2,559,197	7,010	2,643,226
2026	0	37,895	(33,359)	2,600,997	7,010	2,612,543	0	37,645	(33,359)	2,559,247	7,010	2,570,543
2027	0	37,947	10,267	2,601,047	7,010	2,656,271	0	37,697	10,267	2,559,297	7,010	2,614,271
2028	0	37,718	3,995	2,601,097	7,010	2,649,820	0	37,468	3,995	2,559,347	7,010	2,607,820
2029	0	37,729	7,964	2,601,147	7,010	2,653,850	0	37,479	7,964	2,559,397	7,010	2,611,850
2030	0	37,794	(17,556)	2,601,197	7,010	2,628,445	0	37,544	(17,556)	2,559,447	7,010	2,586,445
2031	0	37,789	25,695	2,601,217	7,010	2,671,711	0	37,539	25,695	2,559,467	7,010	2,629,711
2032	0	37,811	(37,642)	2,601,237	7,010	2,608,416	0	37,561	(37,642)	2,559,487	7,010	2,566,416
2033	0	37,766	29,926	2,601,257	7,010	2,675,959	0	37,516	29,926	2,559,507	7,010	2,633,959
2034	0	37,866	(8,755)	2,601,277	7,010	2,637,398	0	37,616	(8,755)	2,559,527	7,010	2,595,398
2035	0	37,564	(7,923)	2,601,297	7,010	2,637,948	0	37,314	(7,923)	2,559,547	7,010	2,595,948

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	Tehachapi Division						Mojave Divsion					
	Edmonston Pumping Plant						Alamo Powerplant					
	Initial Fill Water (51)	Operational Losses (52)	Reservoir Storage Changes (53)	Deliveries: 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)	841,322	6,937	852,317	0	11,665	(15,270)	417,870	1,239	415,504
1988	0	42,017	(29,747)	1,044,737	4,360	1,061,367	0	21,696	1,101	537,568	971	561,336
1989	0	32,270	(60,826)	1,328,041	7,490	1,306,975	0	4,686	(200,363)	716,360	1,407	522,090
1990	0	42,188	(14,959)	1,579,466	8,879	1,615,574	0	8,888	(5,783)	788,111	1,388	792,604
1991	0	33,999	105,176	441,453	4,560	585,188	0	17,908	34,422	177,544	394	230,268
1992	0	23,121	(92,123)	809,771	1,995	742,764	0	14,873	(17,115)	374,110	423	372,291
1993	0	11,946	(127,738)	759,485	1,676	645,369	0	9,304	(3,455)	308,222	443	314,514
1994	0	40,808	(88,211)	960,815	2,918	916,330	0	21,837	3,395	469,996	430	495,658
1995	0	36,001	(16,431)	542,465	1,669	563,704	0	14,139	(30,761)	384,836	427	368,641
1996	0	37,357	16,326	677,533	2,040	733,256	0	7,247	(11,410)	390,211	565	386,613
1997	0	60,881	34,872	814,610	3,920	914,283	0	11,084	55,259	442,436	85	508,864
1998	0	40,264	10,141	1,525,164	7,010	1,582,579	0	22,915	14,071	1,008,614	1,630	1,047,230
1999	0	40,352	103	1,884,349	7,010	1,931,814	0	22,990	27	1,315,349	1,630	1,339,996
2000	0	40,352	101	1,992,955	7,010	2,040,418	0	22,990	26	1,389,425	1,630	1,414,071
2001	0	35,568	(106,390)	2,003,051	7,010	1,939,239	0	21,158	(9,403)	1,406,735	1,630	1,420,120
2002	0	35,575	73,467	1,847,969	7,010	1,964,021	0	21,078	(12,534)	1,312,745	1,630	1,322,919
2003	0	35,713	25,333	1,954,242	7,010	2,022,298	0	21,066	30,867	1,030,732	1,630	1,084,295
2004	0	35,319	(88,850)	1,991,946	7,010	1,945,425	0	21,056	(45,282)	1,050,964	1,630	1,028,368
2005	0	35,318	36,973	2,031,470	7,010	2,110,771	0	20,884	13,333	1,072,644	1,630	1,108,491
2006	0	35,274	(2,330)	2,070,763	7,010	2,110,717	0	20,822	5,954	1,093,684	1,630	1,122,090
2007	0	35,372	3,021	2,110,710	7,010	2,156,113	0	20,927	(4,442)	1,114,965	1,630	1,133,080
2008	0	35,648	62,335	2,155,235	7,010	2,260,228	0	20,989	26,870	1,145,718	1,630	1,195,207
2009	0	35,629	(73,091)	2,190,160	7,010	2,159,708	0	21,104	(38,724)	1,166,872	1,630	1,150,882
2010	0	35,521	16,796	2,225,175	7,010	2,284,502	0	20,910	5,177	1,188,118	1,630	1,215,835
2011	0	35,599	8,867	2,260,540	7,010	2,312,016	0	20,948	2,276	1,209,714	1,630	1,234,568
2012	0	35,678	3,768	2,296,135	7,010	2,342,591	0	20,876	6,333	1,231,540	1,630	1,260,379
2013	0	35,674	5,221	2,331,970	7,010	2,379,875	0	20,854	(7,714)	1,253,605	1,630	1,268,375
2014	0	35,664	3,432	2,368,860	7,010	2,414,966	0	20,798	(4,783)	1,276,725	1,630	1,294,370
2015	0	35,776	11,797	2,395,350	7,010	2,449,933	0	20,866	15,720	1,289,448	1,630	1,327,664
2016	0	35,756	(14,091)	2,420,490	7,010	2,449,165	0	20,837	(22,033)	1,300,817	1,630	1,301,251
2017	0	35,802	19,272	2,445,630	7,010	2,507,714	0	20,804	13,337	1,312,187	1,630	1,347,958
2018	0	35,774	3,436	2,470,770	7,010	2,516,990	0	20,774	(3,483)	1,323,559	1,630	1,342,480
2019	0	35,887	(2,802)	2,495,910	7,010	2,536,005	0	20,805	(7,098)	1,334,930	1,630	1,350,267
2020	0	36,282	18,528	2,521,050	7,010	2,582,870	0	21,127	21,195	1,346,296	1,630	1,390,248
2021	0	36,065	(17,295)	2,534,490	7,010	2,560,270	0	20,951	(19,166)	1,352,385	1,630	1,355,800
2022	0	36,001	5,121	2,534,580	7,010	2,582,712	0	20,898	3,943	1,352,475	1,630	1,378,946
2023	0	36,053	15,907	2,534,670	7,010	2,593,640	0	20,934	12,257	1,352,565	1,630	1,387,386
2024	0	36,161	(31,483)	2,534,760	7,010	2,546,448	0	21,024	(28,018)	1,352,655	1,630	1,347,291
2025	0	36,177	39,292	2,534,850	7,010	2,617,329	0	21,039	38,849	1,352,745	1,630	1,414,263
2026	0	36,095	(33,359)	2,534,900	7,010	2,544,646	0	20,983	(31,254)	1,352,795	1,630	1,344,154
2027	0	36,147	10,267	2,534,950	7,010	2,588,374	0	21,019	9,067	1,352,845	1,630	1,384,561
2028	0	35,918	3,995	2,535,000	7,010	2,581,923	0	20,825	4,308	1,352,895	1,630	1,379,658
2029	0	35,929	7,964	2,535,050	7,010	2,585,953	0	20,812	3,724	1,352,945	1,630	1,379,111
2030	0	35,994	(17,556)	2,535,100	7,010	2,560,548	0	20,884	(14,888)	1,352,995	1,630	1,360,621
2031	0	35,989	25,695	2,535,120	7,010	2,603,814	0	20,892	24,974	1,353,015	1,630	1,400,511
2032	0	36,011	(37,642)	2,535,140	7,010	2,540,519	0	20,915	(30,110)	1,353,035	1,630	1,345,470
2033	0	35,966	29,926	2,535,160	7,010	2,608,062	0	20,889	23,500	1,353,055	1,630	1,399,074
2034	0	36,066	(8,755)	2,535,180	7,010	2,569,501	0	20,929	(8,179)	1,353,075	1,630	1,367,455
2035	0	35,764	(7,923)	2,535,200	7,010	2,570,051	0	20,825	19,466	1,353,095	1,630	1,395,016

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

	California Aqueduct (continued)											
	Mojave Division (continued)											
	Pearblossom Pumping Plant						Mojave Siphon Powerplant					
				Deliveries						Deliveries		
Calendar Year	Initial Fill Water (63)	Operational Losses (64)	Reservoir Storage Changes (65)	Water Supply (66)	Recreation (67)	Total (68)	Initial Fill Water (69)	Operational Losses (70)	Reservoir Storage Changes (71)	Water Supply (72)	Recreation (73)	Total (74)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	21	0	0	0	0	21	0	0	0	0	0	0
1972	35,243	5,282	(153)	1,794	0	42,166	0	0	0	0	0	0
1973	80,177	21,522	(2,700)	52,201	72	151,272	0	0	0	0	0	0
1974	76,694	10,847	(11,149)	102,839	44	179,275	0	0	0	0	0	0
1975	10,000	2,364	(8,397)	190,351	70	194,388	0	0	0	0	0	0
1976	4,168	7,040	(16,055)	236,713	152	232,018	0	0	0	0	0	0
1977	0	11,398	(17,534)	102,326	580	96,770	0	0	0	0	0	0
1978	19,922	5,696	69,130	374,845	498	470,091	0	0	0	0	0	0
1979	12,302	6,836	(32,518)	362,114	502	349,236	0	0	0	0	0	0
1980	0	16,200	6,159	401,214	781	424,354	0	0	0	0	0	0
1981	0	4,992	(36,278)	574,573	933	544,220	0	0	0	0	0	0
1982	0	5,251	55,232	401,037	1,919	463,439	0	0	0	0	0	0
1983	0	11,745	(26,847)	231,188	1,180	217,266	0	0	0	0	0	0
1984	0	18,228	23,230	252,066	1,494	295,018	0	0	0	0	0	0
1985	0	25,292	(2,815)	350,758	1,076	374,311	0	0	0	0	0	0
1986	0	30,876	12,258	394,156	1,508	438,798	0	0	0	0	0	0
1987	0	27,552	(15,270)	367,531	1,239	381,052	0	0	0	0	0	0
1988	0	32,209	1,101	501,300	971	535,581	0	0	0	0	0	0
1989	0	31,500	(20,363)	661,189	1,407	673,733	0	0	0	0	0	0
1990	0	32,672	(5,793)	730,560	1,388	758,827	0	0	0	0	0	0
1991	0	15,209	34,774	164,149	394	214,526	0	0	0	0	0	0
1992	0	13,989	(17,451)	338,249	423	335,210	0	0	0	0	0	0
1993	0	9,779	(3,455)	255,117	443	261,884	0	0	0	0	0	0
1994	0	150	3,395	409,928	430	413,903	0	0	0	0	0	0
1995	0	6,820	(29,282)	328,882	427	306,847	0	0	0	0	0	0
1996	0	9,514	(11,410)	320,611	565	319,280	0	0	0	0	0	0
1997	0	(7,910)	54,147	370,735	85	417,057	0	125	(952)	353,108	0	352,281
1998	0	17,565	14,071	921,357	1,430	954,423	0	14,095	14,071	907,857	1,430	937,453
1999	0	17,640	27	1,221,900	1,430	1,240,997	0	14,170	27	1,203,400	1,430	1,219,027
2000	0	17,640	26	1,292,600	1,430	1,311,696	0	14,170	26	1,274,100	1,430	1,289,726
2001	0	15,808	(9,403)	1,306,800	1,430	1,314,635	0	12,338	(9,403)	1,288,300	1,430	1,292,665
2002	0	15,728	(12,534)	1,209,250	1,430	1,213,874	0	12,258	(12,534)	1,190,750	1,430	1,191,904
2003	0	15,716	30,867	925,132	1,430	973,145	0	12,246	30,867	906,632	1,430	951,175
2004	0	15,706	(45,282)	941,564	1,430	913,418	0	12,236	(45,282)	918,064	1,430	886,448
2005	0	15,534	13,333	959,294	1,430	989,591	0	12,064	13,333	930,794	1,430	957,621
2006	0	15,472	5,954	976,184	1,430	999,040	0	12,002	5,954	942,684	1,430	962,070
2007	0	15,577	(4,442)	993,115	1,430	1,005,680	0	12,107	(4,442)	954,615	1,430	963,710
2008	0	15,639	26,870	1,019,343	1,430	1,063,282	0	12,169	26,870	975,843	1,430	1,016,312
2009	0	15,754	(38,724)	1,035,772	1,430	1,014,232	0	12,284	(38,724)	987,272	1,430	962,262
2010	0	15,560	5,177	1,052,043	1,430	1,074,210	0	12,090	5,177	998,543	1,430	1,017,240
2011	0	15,598	2,276	1,068,464	1,430	1,087,768	0	12,128	2,276	1,009,964	1,430	1,025,798
2012	0	15,526	6,333	1,084,885	1,430	1,108,174	0	12,056	6,333	1,021,385	1,430	1,041,204
2013	0	15,504	(7,714)	1,101,305	1,430	1,110,525	0	12,034	(7,714)	1,032,805	1,430	1,038,555
2014	0	15,448	(4,783)	1,118,525	1,430	1,130,620	0	11,978	(4,783)	1,044,225	1,430	1,052,850
2015	0	15,516	15,720	1,129,948	1,430	1,162,614	0	12,046	15,720	1,055,648	1,430	1,084,844
2016	0	15,487	(22,033)	1,141,317	1,430	1,136,201	0	12,017	(22,033)	1,067,017	1,430	1,058,431
2017	0	15,454	13,337	1,152,687	1,430	1,182,908	0	11,984	13,337	1,078,387	1,430	1,105,138
2018	0	15,424	(3,483)	1,164,059	1,430	1,177,430	0	11,954	(3,483)	1,089,759	1,430	1,099,660
2019	0	15,455	(7,098)	1,175,430	1,430	1,185,217	0	11,985	(7,098)	1,101,130	1,430	1,107,447
2020	0	15,777	21,195	1,186,796	1,430	1,225,198	0	12,307	21,195	1,112,496	1,430	1,147,428
2021	0	15,601	(19,166)	1,192,885	1,430	1,190,750	0	12,131	(19,166)	1,118,585	1,430	1,112,980
2022	0	15,548	3,943	1,192,975	1,430	1,213,896	0	12,078	3,943	1,118,675	1,430	1,136,126
2023	0	15,584	12,257	1,193,065	1,430	1,222,336	0	12,114	12,257	1,118,765	1,430	1,144,566
2024	0	15,674	(28,018)	1,193,155	1,430	1,182,241	0	12,204	(28,018)	1,118,855	1,430	1,104,471
2025	0	15,689	38,849	1,193,245	1,430	1,249,213	0	12,219	38,849	1,118,945	1,430	1,171,443
2026	0	15,633	(31,254)	1,193,295	1,430	1,179,104	0	12,163	(31,254)	1,118,995	1,430	1,101,334
2027	0	15,669	9,067	1,193,345	1,430	1,219,511	0	12,199	9,067	1,119,045	1,430	1,141,741
2028	0	15,475	4,308	1,193,395	1,430	1,214,608	0	12,005	4,308	1,119,095	1,430	1,136,838
2029	0	15,462	3,724	1,193,445	1,430	1,214,061	0	11,992	3,724	1,119,145	1,430	1,136,291
2030	0	15,534	(14,888)	1,193,495	1,430	1,195,571	0	12,064	(14,888)	1,119,195	1,430	1,117,801
2031	0	15,542	24,974	1,193,515	1,430	1,235,461	0	12,072	24,974	1,119,215	1,430	1,157,691
2032	0	15,565	(30,110)	1,193,535	1,430	1,180,420	0	12,095	(30,110)	1,119,235	1,430	1,102,650
2033	0	15,539	23,500	1,193,555	1,430	1,234,024	0	12,069	23,500	1,119,255	1,430	1,156,254
2034	0	15,579	(8,179)	1,193,575	1,430	1,202,405	0	12,109	(8,179)	1,119,275	1,430	1,124,635
2035	0	15,475	19,466	1,193,595	1,430	1,229,966	0	12,005	19,466	1,119,295	1,430	1,152,196

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

	California Aqueduct (continued)											
	Santa Ana Division						West Branch, California Aqueduct					
	Devil Canyon Powerplant						Oso Pumping Plant					
				Deliveries						Deliveries		
Calendar Year	Initial Fill Water (75)	Operational Losses (76)	Reservoir Storage Changes (77)	Water Supply (78)	Recreation (79)	Total (80)	Initial Fill Water (81)	Operational Losses (82)	Reservoir Storage Changes (83)	Water Supply (84)	Recreation (85)	Total (86)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	2,444	133	0	0	0	2,577
1972	37	0	0	1,275	0	1,312	63,883	6,557	(6,405)	71,991	6,481	142,507
1973	40,848	14,745	0	51,812	0	107,405	124,461	16,995	4,029	155,317	1,075	301,877
1974	74,666	8,367	(4,925)	102,198	0	180,306	160,860	12,702	(4,146)	209,172	2,064	380,652
1975	10,000	1,995	(6,719)	189,526	0	194,802	93,352	23,008	7,704	374,306	3,288	501,658
1976	4,168	5,180	(9,182)	235,711	23	235,900	56,954	15,845	(136,116)	420,708	1,429	358,820
1977	0	8,082	(5,235)	101,137	469	104,453	0	4,407	(98,685)	122,447	(20)	28,149
1978	14,820	3,754	21,686	373,636	481	414,377	45,105	9,061	52,774	171,139	176	278,255
1979	12,302	5,620	(27,107)	356,854	485	348,154	0	25,355	(18,781)	145,598	0	152,172
1980	0	9,468	12,714	395,975	742	418,899	0	24,576	(140,168)	165,931	481	50,820
1981	0	8,401	(23,448)	569,088	807	554,848	0	15,254	59,637	283,264	3,179	361,334
1982	0	6,012	44,469	399,799	1,798	452,078	0	23,824	61,685	360,878	2,126	448,513
1983	0	8,597	5,188	230,277	1,078	245,140	0	23,601	(74,308)	166,995	6,111	122,399
1984	0	12,861	(850)	250,938	1,414	264,363	0	12,461	(138,146)	272,101	3,750	150,166
1985	0	14,325	(8,791)	349,336	956	355,826	0	28,257	142,219	403,097	3,728	577,301
1986	0	9,486	8,339	392,650	1,378	411,853	0	22,387	25,288	393,203	1,777	442,655
1987	0	7,919	(11,331)	365,451	1,118	363,157	0	18,164	(10,252)	433,452	5,698	447,062
1988	0	11,090	2,238	499,285	861	513,474	0	20,885	(30,848)	507,169	3,389	500,595
1989	0	13,116	(5,487)	658,730	1,301	667,660	0	28,925	(40,463)	611,681	6,083	606,226
1990	0	13,439	(4,622)	728,723	1,281	738,821	0	34,778	(9,176)	791,355	7,491	824,448
1991	0	10,836	18,308	161,032	340	190,516	0	16,323	70,754	263,909	4,166	355,152
1992	0	9,157	(9,084)	328,354	371	328,798	0	8,200	(75,008)	435,661	1,572	370,425
1993	0	5,602	5,593	244,678	364	256,237	0	2,668	(124,283)	451,263	1,233	330,881
1994	0	10,915	(11,045)	393,690	357	393,917	0	17,831	(91,606)	490,819	2,488	419,532
1995	0	11,268	2,331	320,978	358	334,935	0	21,506	14,330	157,629	1,242	194,707
1996	0	9,496	13,015	314,015	494	337,020	0	30,156	27,736	287,322	1,475	346,689
1997	0	125	(952)	353,108	0	352,281	0	39,007	(20,398)	351,234	3,835	373,678
1998	0	9,947	13,071	905,907	1,250	930,175	0	17,299	(3,930)	516,550	5,380	535,299
1999	0	9,988	27	1,201,450	1,250	1,212,715	0	17,312	76	569,000	5,380	591,768
2000	0	9,988	26	1,272,150	1,250	1,283,414	0	17,312	75	603,530	5,380	626,297
2001	0	8,755	1,447	1,286,350	1,250	1,297,802	0	14,360	(96,987)	596,316	5,380	519,069
2002	0	8,750	5,111	1,188,800	1,250	1,203,911	0	14,447	86,001	535,224	5,380	641,052
2003	0	8,512	(447)	904,482	1,250	913,797	0	14,597	(5,534)	923,510	5,380	937,953
2004	0	8,601	(17,982)	915,714	1,250	907,583	0	14,213	(43,568)	940,982	5,380	917,007
2005	0	8,510	879	928,244	1,250	938,883	0	14,384	23,640	958,826	5,380	1,002,230
2006	0	8,503	(3,634)	939,974	1,250	946,093	0	14,402	(8,284)	977,079	5,380	988,577
2007	0	8,528	8,152	951,705	1,250	969,635	0	14,395	7,463	995,745	5,380	1,022,983
2008	0	8,511	12,726	972,733	1,250	995,220	0	14,609	35,465	1,009,517	5,380	1,064,971
2009	0	8,661	(15,477)	983,962	1,250	978,396	0	14,475	(34,367)	1,023,288	5,380	1,008,776
2010	0	8,492	(4,824)	995,193	1,250	1,000,111	0	14,561	11,619	1,037,057	5,380	1,068,617
2011	0	8,488	12,205	1,006,424	1,250	1,028,367	0	14,601	6,591	1,050,826	5,380	1,077,398
2012	0	8,460	(6,936)	1,017,655	1,250	1,020,429	0	14,752	(2,565)	1,064,595	5,380	1,082,162
2013	0	8,517	940	1,028,885	1,250	1,039,592	0	14,770	12,935	1,078,365	5,380	1,111,450
2014	0	8,454	(2,106)	1,040,115	1,250	1,047,713	0	14,816	8,215	1,092,135	5,380	1,120,546
2015	0	8,500	1,645	1,051,348	1,250	1,062,743	0	14,860	(3,923)	1,105,902	5,380	1,122,219
2016	0	8,434	(5,856)	1,062,577	1,250	1,066,405	0	14,869	7,942	1,119,673	5,380	1,147,864
2017	0	8,454	1,822	1,073,807	1,250	1,085,333	0	14,948	5,935	1,133,443	5,380	1,159,706
2018	0	8,438	3,646	1,085,039	1,250	1,098,373	0	14,950	6,919	1,147,211	5,380	1,174,460
2019	0	8,427	(1,974)	1,096,270	1,250	1,103,973	0	15,032	4,296	1,160,980	5,380	1,185,688
2020	0	8,522	11,377	1,107,496	1,250	1,128,645	0	15,105	(2,667)	1,174,754	5,380	1,192,572
2021	0	8,475	(9,129)	1,113,495	1,250	1,114,091	0	15,064	1,871	1,182,105	5,380	1,204,420
2022	0	8,412	(6,607)	1,113,495	1,250	1,116,550	0	15,053	1,178	1,182,105	5,380	1,203,716
2023	0	8,436	(2,410)	1,113,495	1,250	1,120,771	0	15,069	3,650	1,182,105	5,380	1,206,204
2024	0	8,458	2,039	1,113,495	1,250	1,125,242	0	15,087	(3,465)	1,182,105	5,380	1,199,107
2025	0	8,459	7,882	1,113,495	1,250	1,131,086	0	15,088	443	1,182,105	5,380	1,203,016
2026	0	8,431	(10,683)	1,113,495	1,250	1,112,493	0	15,062	(2,105)	1,182,105	5,380	1,200,442
2027	0	8,460	13,462	1,113,495	1,250	1,136,667	0	15,078	1,200	1,182,105	5,380	1,203,763
2028	0	8,418	(5,919)	1,113,495	1,250	1,117,244	0	15,043	(313)	1,182,105	5,380	1,202,215
2029	0	8,419	(4,026)	1,113,495	1,250	1,119,138	0	15,067	4,240	1,182,105	5,380	1,206,792
2030	0	8,416	(507)	1,113,495	1,250	1,122,654	0	15,060	(2,668)	1,182,105	5,380	1,199,877
2031	0	8,438	8,867	1,113,495	1,250	1,132,050	0	15,047	721	1,182,105	5,380	1,203,253
2032	0	8,448	(8,095)	1,113,495	1,250	1,115,098	0	15,046	(7,532)	1,182,105	5,380	1,194,999
2033	0	8,399	(2,724)	1,113,495	1,250	1,120,420	0	15,027	6,426	1,182,105	5,380	1,208,938
2034	0	8,407	12,050	1,113,495	1,250	1,135,202	0	15,087	(576)	1,182,105	5,380	1,201,996
2035	0	8,432	110	1,113,495	1,250	1,123,287	0	14,889	(27,389)	1,182,105	5,380	1,174,985

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

	California Aqueduct (continued)											
	West Branch, California Aqueduct (continued)											
	Warne Powerplant						Castaic Powerplant					
				Deliveries						Deliveries		
Calendar Year	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)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	57,364	1,788	(6,162)	71,938	6,481	131,409
1973	0	0	0	0	0	0	37,198	6,430	4,542	155,297	1,075	204,542
1974	0	0	0	0	0	0	82,364	1,772	(950)	209,136	541	292,863
1975	0	0	0	0	0	0	90,460	5,002	(1,534)	374,280	1,563	469,771
1976	0	0	0	0	0	0	55,990	(7,695)	(132,036)	420,684	1,429	338,372
1977	0	0	0	0	0	0	0	(1,485)	(102,532)	122,447	(20)	18,410
1978	0	0	0	0	0	0	45,105	(2,264)	129,523	171,139	176	343,679
1979	0	0	0	0	0	0	0	(2,339)	(20,400)	145,598	0	122,859
1980	0	0	0	0	0	0	0	991	(118,026)	165,931	481	49,377
1981	0	0	0	0	0	0	0	(44,416)	47,244	283,264	2,704	288,796
1982	0	24,468	61,169	360,878	2,126	448,641	0	(60,135)	59,069	360,878	1,187	360,999
1983	0	20,780	(74,308)	166,995	6,111	119,578	0	(33,418)	(46,904)	166,995	2,618	89,291
1984	0	13,572	(139,219)	275,212	2,208	151,773	0	(29,618)	(139,545)	275,212	2,201	108,250
1985	0	29,286	141,492	403,097	874	574,749	0	(4,622)	135,007	403,097	844	534,326
1986	0	21,579	25,288	393,203	1,777	441,847	0	(6,664)	21,520	393,203	623	408,682
1987	0	20,885	(10,252)	433,452	5,698	449,783	0	(519)	(6,241)	433,452	2,734	429,426
1988	0	23,253	(31,453)	507,169	3,389	502,358	0	12,650	(28,498)	507,169	1,359	492,680
1989	0	27,131	(40,463)	611,681	6,083	604,432	0	634	(40,154)	611,681	3,161	575,322
1990	0	34,208	(9,176)	791,355	7,491	823,878	0	(14,012)	(1,501)	786,519	3,419	774,425
1991	0	16,908	70,754	263,909	4,166	355,737	0	(871)	89,637	262,921	2,283	353,970
1992	0	9,638	(75,008)	435,661	1,572	371,863	0	(609)	(71,795)	435,661	1,543	364,800
1993	0	1,922	(124,283)	451,257	1,233	330,129	0	21,959	(77,428)	451,257	1,211	396,999
1994	0	23,151	(91,606)	490,819	2,488	424,852	0	5,205	(95,738)	490,819	2,465	402,751
1995	0	15,860	14,330	157,629	1,242	189,061	0	20,400	75,863	157,629	1,223	255,115
1996	0	21,191	27,736	287,322	1,475	337,724	0	(5,621)	19,976	287,322	1,474	303,151
1997	0	29,253	(2,874)	303,745	3,417	333,541	0	23,604	(3,395)	303,734	3,417	327,360
1998	0	15,389	(3,930)	516,550	5,380	533,389	0	9,661	(1,930)	513,400	2,330	523,461
1999	0	15,402	76	569,000	5,380	589,858	0	9,677	76	565,850	2,330	577,933
2000	0	15,402	75	603,530	5,380	624,387	0	9,677	75	600,380	2,330	612,462
2001	0	12,450	(96,987)	596,316	5,380	517,159	0	6,162	(101,889)	593,166	2,330	499,769
2002	0	12,537	86,001	535,224	5,380	639,142	0	6,252	86,001	532,074	2,330	626,657
2003	0	12,687	(5,534)	923,510	5,380	936,043	0	6,402	(5,534)	917,210	2,330	920,408
2004	0	12,303	(43,568)	940,982	5,380	915,097	0	6,018	(43,568)	934,682	2,330	899,462
2005	0	12,474	23,640	958,826	5,380	1,000,320	0	6,189	23,640	952,526	2,330	984,685
2006	0	12,492	(8,284)	977,079	5,380	986,667	0	6,207	(8,284)	970,779	2,330	971,032
2007	0	12,485	7,463	995,745	5,380	1,021,073	0	6,200	7,463	989,445	2,330	1,005,438
2008	0	12,699	35,465	1,009,517	5,380	1,063,061	0	6,414	35,465	1,003,217	2,330	1,047,426
2009	0	12,565	(34,367)	1,023,288	5,380	1,006,866	0	6,280	(34,367)	1,016,988	2,330	991,231
2010	0	12,651	11,619	1,037,057	5,380	1,066,707	0	6,366	11,619	1,030,757	2,330	1,051,072
2011	0	12,691	6,591	1,050,826	5,380	1,075,488	0	6,406	6,591	1,044,526	2,330	1,059,853
2012	0	12,842	(2,565)	1,064,595	5,380	1,080,252	0	6,557	(2,565)	1,058,295	2,330	1,064,617
2013	0	12,860	12,935	1,078,365	5,380	1,109,540	0	6,575	12,935	1,072,065	2,330	1,093,905
2014	0	12,906	8,215	1,092,135	5,380	1,118,636	0	6,621	8,215	1,085,835	2,330	1,103,001
2015	0	12,950	(3,923)	1,105,902	5,380	1,120,309	0	6,665	(3,923)	1,099,602	2,330	1,104,674
2016	0	12,959	7,942	1,119,673	5,380	1,145,954	0	6,674	7,942	1,113,373	2,330	1,130,319
2017	0	13,038	5,935	1,133,443	5,380	1,157,796	0	6,753	5,935	1,127,143	2,330	1,142,161
2018	0	13,040	6,919	1,147,211	5,380	1,172,550	0	6,755	6,919	1,140,911	2,330	1,156,915
2019	0	13,122	4,296	1,160,980	5,380	1,183,778	0	6,837	4,296	1,154,680	2,330	1,168,143
2020	0	13,195	(2,667)	1,174,754	5,380	1,190,662	0	6,910	(2,667)	1,168,454	2,330	1,175,027
2021	0	13,154	1,871	1,182,105	5,380	1,202,510	0	6,869	1,871	1,175,805	2,330	1,186,875
2022	0	13,143	1,178	1,182,105	5,380	1,201,806	0	6,858	1,178	1,175,805	2,330	1,186,171
2023	0	13,159	3,650	1,182,105	5,380	1,204,294	0	6,874	3,650	1,175,805	2,330	1,188,659
2024	0	13,177	(3,465)	1,182,105	5,380	1,197,197	0	6,892	(3,465)	1,175,805	2,330	1,181,562
2025	0	13,178	443	1,182,105	5,380	1,201,106	0	6,893	443	1,175,805	2,330	1,185,471
2026	0	13,152	(2,105)	1,182,105	5,380	1,198,532	0	6,867	(2,105)	1,175,805	2,330	1,182,897
2027	0	13,168	1,200	1,182,105	5,380	1,201,853	0	6,883	1,200	1,175,805	2,330	1,186,218
2028	0	13,133	(313)	1,182,105	5,380	1,200,305	0	6,848	(313)	1,175,805	2,330	1,184,670
2029	0	13,157	4,240	1,182,105	5,380	1,204,882	0	6,872	4,240	1,175,805	2,330	1,189,247
2030	0	13,150	(2,668)	1,182,105	5,380	1,197,967	0	6,865	(2,668)	1,175,805	2,330	1,182,332
2031	0	13,137	721	1,182,105	5,380	1,201,343	0	6,852	721	1,175,805	2,330	1,185,708
2032	0	13,136	(7,532)	1,182,105	5,380	1,193,089	0	6,851	(7,532)	1,175,805	2,330	1,177,454
2033	0	13,117	6,426	1,182,105	5,380	1,207,028	0	6,832	6,426	1,175,805	2,330	1,191,393
2034	0	13,177	(576)	1,182,105	5,380	1,200,086	0	6,892	(576)	1,175,805	2,330	1,184,451
2035	0	12,979	(27,389)	1,182,105	5,380	1,173,075	0	6,694	(27,389)	1,175,805	2,330	1,157,440

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)						
	Coastal Branch, California Aqueduct						
	Las Perillas and Badger Hill Pumping Plants				Devil's Den, Bluestone, and Polonio Pass Pumping Plants		
	Initial Fill Water (99)	Operational Losses (100)	Water Supply Delivery (101)	Total (102)	Operational Losses (103)	Water Supply Delivery (104)	Total (105)
1961	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0
1968	210	873	79,039	80,122	0	0	0
1969	0	1,042	62,064	63,106	0	0	0
1970	0	638	83,649	84,287	0	0	0
1971	0	3,455	110,971	114,426	0	0	0
1972	0	1,745	121,755	123,500	0	0	0
1973	0	5,479	78,645	84,124	0	0	0
1974	0	7,344	78,174	85,518	0	0	0
1975	0	5,819	85,216	91,035	0	0	0
1976	0	6,562	90,058	96,620	0	0	0
1977	0	5,777	40,579	46,356	0	0	0
1978	0	9,085	92,604	101,689	0	0	0
1979	0	10,896	123,155	134,051	0	0	0
1980	0	9,449	111,379	120,828	0	0	0
1981	0	13,232	109,754	122,986	0	0	0
1982	0	7,984	95,776	103,760	0	0	0
1983	0	5,710	100,518	106,228	0	0	0
1984	0	5,740	126,387	132,127	0	0	0
1985	0	7,563	120,823	128,386	0	0	0
1986	0	8,562	131,599	140,161	0	0	0
1987	0	11,363	128,080	139,443	0	0	0
1988	0	12,831	120,969	133,800	0	0	0
1989	0	11,454	116,801	128,255	0	0	0
1990	0	13,022	109,802	122,824	0	0	0
1991	0	5,802	1,496	7,298	0	0	0
1992	0	7,893	79,635	87,528	0	0	0
1993	0	9,282	94,921	104,203	0	0	0
1994	0	8,414	87,158	95,572	0	0	0
1995	0	6,979	94,536	101,515	0	0	0
1996	0	9,663	114,630	124,293	0	0	0
1997	0	9,730	8,638	18,368	0	8,638	8,638
1998	0	802	135,885	136,687	212	31,085	31,297
1999	0	802	153,090	153,892	212	49,290	49,502
2000	0	802	153,145	153,947	212	49,345	49,557
2001	0	802	153,103	153,905	212	49,303	49,515
2002	0	802	153,123	153,925	212	49,323	49,535
2003	0	802	176,839	177,641	212	70,486	70,698
2004	0	802	176,839	177,641	212	70,486	70,698
2005	0	802	173,519	174,321	212	70,486	70,698
2006	0	802	169,036	169,838	212	70,486	70,698
2007	0	802	164,139	164,941	212	70,486	70,698
2008	0	802	164,139	164,941	212	70,486	70,698
2009	0	802	164,139	164,941	212	70,486	70,698
2010	0	802	164,139	164,941	212	70,486	70,698
2011	0	802	164,139	164,941	212	70,486	70,698
2012	0	802	164,139	164,941	212	70,486	70,698
2013	0	802	164,139	164,941	212	70,486	70,698
2014	0	802	164,139	164,941	212	70,486	70,698
2015	0	802	164,139	164,941	212	70,486	70,698
2016	0	802	164,139	164,941	212	70,486	70,698
2017	0	802	164,139	164,941	212	70,486	70,698
2018	0	802	164,139	164,941	212	70,486	70,698
2019	0	802	164,139	164,941	212	70,486	70,698
2020	0	802	164,139	164,941	212	70,486	70,698
2021	0	802	164,139	164,941	212	70,486	70,698
2022	0	802	164,139	164,941	212	70,486	70,698
2023	0	802	164,139	164,941	212	70,486	70,698
2024	0	802	164,139	164,941	212	70,486	70,698
2025	0	802	164,139	164,941	212	70,486	70,698
2026	0	802	164,139	164,941	212	70,486	70,698
2027	0	802	164,139	164,941	212	70,486	70,698
2028	0	802	164,139	164,941	212	70,486	70,698
2029	0	802	164,139	164,941	212	70,486	70,698
2030	0	802	164,139	164,941	212	70,486	70,698
2031	0	802	164,139	164,941	212	70,486	70,698
2032	0	802	164,139	164,941	212	70,486	70,698
2033	0	802	164,139	164,941	212	70,486	70,698
2034	0	802	164,139	164,941	212	70,486	70,698
2035	0	802	164,139	164,941	212	70,486	70,698

Table B-7

Reconciliation of Capital Costs Allocated to Water Supply and Power 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 Tranportation Water Charge (f (6)	Water Supply and Power Total (7)		
Conservation Facilities									
Upper Feather Division									
Frenchman Dam and Lake	154	0	0	0	603	0	757	2,287	3,644
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	210	0	0	0	642	0	852	16,554	17,406
Oroville Division									
Multipurpose Facilities	7,423	0	0	0	376,085	0	383,508	88,871	472,379
Specific Power Facilities	546	3	0	0	96,177	0	96,726	600	97,326
Total, Oroville Division	7,969	3	0	0	472,262	0	480,234	89,471	569,705
California Aqueduct									
North San Joaquin Division	2,252	12	0	0	80,951	0	82,215	2,911	86,126
San Luis Division	(13,765)	1	0	0	106,781	0	93,017	4,757	97,326
Total, California Aqueduct	(11,513)	13	0	0	187,732	0	176,232	7,666	183,900
Delta Facilities	52,219	6,240	0	0	342,513	0	400,972	47,116	448,088
Planning and Pre-operation	2,325	5,187	0	0	101,473	0	108,985	0	108,985
Total, Conservation Facilities	51,210	11,443	0	0	1,104,622	0	1,167,275	160,809	1,328,084
Transportation Facilities									
Upper Feather Division									
Grizzly Valley Pipeline	0	0	181	0	0	341	522	0	522
North Bay Aqueduct	640	13	676	0	0	93,128	94,457	0	94,457
South Bay Aqueduct	2,104	1	1,607	0	0	55,236	58,948	21,668	80,616
California Aqueduct									
North San Joaquin Division	1,056	29	51	0	0	180,852	181,988	6,479	188,467
San Luis Division	37,929	2	0	0	0	165,621	203,552	10,404	213,956
South San Joaquin Division	3,467	1	3,427	2,093	0	286,607	295,595	16,884	312,479
Tehachapi Division	1,248	6	0	5,230	0	304,860	311,344	18,400	329,744
Mojave Division	904	2	717	0	0	326,268	327,891	38,604	366,495
Santa Ana Division	6,861	10	5,804	5,331	0	218,359	236,365	32,119	268,484
West Branch	43,365	67	522	37	0	478,385	522,376	34,344	556,720
Coastal Branch	6,201	48	76	0	0	483,320	489,645	0	489,645
Total, California Aqueduct	101,031	165	10,597	12,691	0	2,444,272	2,568,756	157,234	2,725,990
Total, Transportation Facilities	103,775	179	13,061	12,691	0	2,592,977	2,722,683	178,902	2,901,585
East Branch Enlargement	0	0	0	0	0	453,459	453,459	0	453,459
East Branch Extension	0	0	0	0	0	78,089	78,089	0	78,089
Coastal Branch Extension	0	0	0	0	0	26,361	26,361	0	26,361
San Joaquin Drainage Facilities	0	0	0	0	0	0	0	93,316	93,316
Off-Aqueduct Power Generation Facilities	0	0	0	0	0	460,275	460,275		460,275
Small-Hydro Power Generation Facilities	0	0	0	0	14,162	73,427	87,589	0	87,589
Land Purchase - Kern Water Bank	0	0	0	0	34,686	0	34,686	0	34,686
Unassigned/ Miscellaneous	2,236	2,236	0	0	0	0	2,236	305	2,541
Davis-Grunsky	0	1,334	0	0	0	0	1,334	128,666	130,000
Total through 2010	157,221	12,956	13,061	12,691	1,153,470	3,684,588	5,033,987	561,998	5,595,985

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, 1995.
c) See Table B-8.
d) See Table B-9.
e) See Table B-13. A portion of these costs will be offset by power generation sales and credits. Planning and preoperations line item includes $49,320,000 of planning costs financed from Systems Revenues and is not included in Table 15-3. Oroville Division total reduced by $14,162,000 for costs included under Small Hydro. CALFED Program costs totalling $9,000,000 are not included in Table B-7, but are included in Table 15-3.
f) See Table B-10. Mojave Division total reduced by $73,427,000 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*
	1952-1995 (1)	*1996 (2)*	*1997 (3)*	*1998 (4)*	*1999 (5)*	*2000 (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	250,325	801	240	25,000	10,000	0	286,366
Alameda County Water District	232,484	0	0	0	0	0	232,484
Santa Clara Valley Water District	21,500	0	0	0	0	0	21,500
San Francisco Water Department (b	1,058,569	3,935	3,703	0	0	0	1,066,207
Subtotal	1,562,878	4,736	3,943	25,000	10,000	0	1,606,557
Central Coastal Area							
San Luis Obispo County Flood Control and Water Conservation District	9,192	0	0	0	0	0	9,192
Santa Barbara County Flood Control and Water Conservation District	67,058	0	0	0	0	0	67,058
Subtotal	76,250	0	0	0	0	0	76,250
San Joaquin Valley Area							
Castaic Lake Water Agency	82,567	0	0	0	0	0	82,567
Dudley Ridge Water District	289,412	8,619	4,652	0	0	0	302,683
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	2,745,209	1,761	13,403	70,000	10,000	0	2,840,373
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	3,457,573	10,380	18,055	70,000	10,000	0	3,566,008
Southern California Area							
Antelope Valley-East Kern Water Agency	384,750	0	0	0	0	0	384,750
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	21,054	4,042	202	0	0	0	25,298
Desert Water Agency	23,438	0	0	0	0	0	23,438
Littlerock Creek Irrigation District	23,732	0	0	0	0	0	23,732
Mojave Water Agency	173,306	18,397	19,032	1,000	0	0	211,735
Palmdale Water District	34,173	0	0	0	0	0	34,173
San Bernardino Valley Municipal Water District	801,669	0	0	0	0	0	801,669
San Gabriel Valley Municipal Water District	131,052	0	0	0	0	0	131,052
San Gorgonio Pass Water Agency	66,530	0	0	0	0	0	66,530
Metropolitan Water District of Southern California	4,796,835	7,485	0	0	0	0	4,804,320
Ventura County Flood Control District	79,699	0	0	0	0	0	79,699
Subtotal	6,905,189	29,924	19,234	1,000	0	0	6,955,347
Total	12,782,473	45,040	41,232	96,000	20,000	0	13,060,995

a) Approximate only, not to be construed as invoice amounts.
b) Not a SWP water supply contractor.
c) Not a SWP water supply contractor, but has contracted for water.

Table B-9

Capital Costs of Requested Excess Peaking Capacity

(Dollars)

Calendar Year	Total Advance Payments and Credits for Excess Capacity (1)	Incremental Costs for Excess Capacity (2)	Overpayment (+) or Underpayment (-) (a (3)	Annual Surplus Money Investment Fund Interest Rate (b January-June (4)	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	North Bay Aqueduct					South Bay Aqueduct			
		Reach 1	Reach 2	Reach 3A	Reach 3B	Total	Reach 1	Reach 2	Reach 4	Reach 5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1952	0	0	0	0	0	0	97	34	30	57
1953	0	0	0	0	0	0	477	166	144	297
1954	0	0	0	0	0	0	1,466	508	437	959
1955	0	0	0	0	0	0	1,944	674	560	1,266
1956	0	0	0	0	0	0	18,789	6,515	5,090	12,545
1957	0	13,290	3,391	0	9,953	26,634	45,090	15,639	12,285	33,218
1958	2	19,202	5,011	0	25,798	50,011	195,985	80,961	7,714	21,930
1959	14	7,517	2,118	0	17,653	27,288	496,140	148,516	24,945	17,118
1960	28	8,797	4,292	0	4,838	17,927	1,130,378	67,351	71,779	68,028
1961	10	1,551	10,318	0	2,526	14,395	3,273,247	180,596	307,885	74,398
1962	32	217	(1,751)	0	414	(1,120)	1,548,884	203,535	695,446	35,102
1963	51	2,510	(1,063)	0	983	2,430	480,716	69,182	2,284,291	206,587
1964	7,791	39,879	12,046	0	21,934	73,859	2,549,118	15,903	181,900	264,410
1965	3,139	72,793	17,900	0	170,361	261,054	807,505	153,454	85,425	447,830
1966	(48)	59,615	12,972	0	438,949	511,536	898,074	149,529	142,096	1,690,200
1967	47	47,257	11,597	0	1,551,023	1,609,877	607,614	50,423	293,304	3,496,284
1968	51,573	70,586	19,560	0	831,158	921,304	965,119	19,543	89,300	2,931,101
1969	234,232	63,650	23,628	0	46,428	133,706	455,173	9,618	3,860	896,727
1970	16,227	59,090	42,733	0	9,415	111,238	52,481	3,380	10,517	154,358
1971	27,204	20,819	31,516	0	8,480	60,815	24,505	4,645	5,035	20,395
1972	9	15,538	12,952	0	10,058	38,548	26,918	825	2,945	26,090
1973	25	18,488	29,018	0	39,878	87,384	24,468	4,010	6,016	12,708
1974	45	67,352	29,978	0	134,332	231,662	17,108	1,192	1,765	65,587
1975	21	62,855	73,112	0	45,091	181,058	57,619	561	1,165	7,291
1976	51	52,419	75,611	218	13,168	141,416	104,242	2,846	8,915	12,701
1977	28	53,274	65,662	2,240	23,138	144,314	176,062	3,625	3,225	16,158
1978	38	61,936	57,158	2,955	28,987	151,036	264,581	4,494	3,668	14,028
1979	23	316,620	91,367	3,953	62,240	474,180	111,106	17,151	8,515	31,725
1980	26	422,804	111,600	19,910	96,125	650,439	368,942	17,708	8,249	38,045
1981	34	430,992	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	11,873,774	7,214,307	1,628,902	1,670,596	22,387,579	126,377	15,693	27,881	32,931
1988	55	3,293,824	1,648,304	1,016,900	690,694	6,649,722	329,480	36,744	51,786	26,341
1989	44	1,057,766	950,985	271,816	375,753	2,656,320	139,332	16,848	35,518	12,865
1990	63	493,680	537,881	215,832	71,843	1,319,236	252,188	29,908	97,753	38,596
1991	54	76,665	17,131	36,467	70,589	200,852	1,153,632	26,917	53,623	21,925
1992	42	56,898	6,636	31,723	38,000	133,257	402,413	53,080	61,943	52,446
1993	30	104,317	24,579	30,446	82,032	241,374	313,475	55,679	79,149	39,294
1994	14	68,065	13,463	65,753	45,908	193,189	(211,712)	29,017	362,585	36,350
1995	3	26,002	5,920	23,713	20,617	76,252	265,751	42,516	48,189	21,436
1996	0	14,252	3,425	43,062	14,564	75,303	139,052	13,213	25,431	10,261
1997	1	65,834	34,951	33,134	39,661	173,580	195,853	29,626	35,054	16,340
1998	0	1,157	0	0	0	1,157	46,513	0	0	0
1999	0	1,033	0	0	0	1,033	24,561	0	0	0
2000	0	826	0	0	0	826	19,641	0	0	0
2001	0	826	0	0	0	826	19,641	0	0	0
2002	0	534	0	0	0	534	12,713	0	0	0
2003	0	243	0	0	0	243	5,786	0	0	0
2004	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	341,056	41,695,347	32,967,774	4,752,439	13,712,449	93,128,009	18,804,349	1,732,212	5,229,375	11,162,581

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	498,077	3,369,349	(128,051)	(56,448)	3,184,850
1989	2,641	3,878	4,755	14,489	230,326	7,004,330	346,589	173,993	7,524,912
1990	5,071	19,811	36,511	86,384	566,222	13,464,112	111,042	2,410,089	15,985,243
1991	1,942	5,061	7,359	31,693	1,302,152	13,920,168	133,136	115,025	14,168,329
1992	1,203	2,176	2,414	35,803	611,478	6,263,298	242,871	240,124	6,746,293
1993	3,618	6,028	8,873	42,200	548,316	2,542,869	257,330	200,072	3,000,271
1994	2,897	4,781	5,346	89,991	319,255	1,145,666	148,396	88,357	1,382,419
1995	11,556	3,635	14,769	24,750	432,602	1,462,211	217,940	131,995	1,812,146
1996	3,174	2,263	2,855	12,773	209,022	870,998	74,245	42,248	987,491
1997	1,368	3,712	3,539	19,277	304,769	2,063,419	143,221	76,787	2,283,427
1998	0	0	0	0	46,513	2,059,024	74,253	2,933	2,136,210
1999	0	0	0	0	24,561	2,247,968	219,558	2,933	2,470,459
2000	0	0	0	0	19,641	1,971,020	217,425	1,466	2,189,911
2001	0	0	0	0	19,641	150,468	0	0	150,468
2002	0	0	0	0	12,713	97,397	0	0	97,397
2003	0	0	0	0	5,786	44,326	0	0	44,326
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	561,205	3,875,540	4,910,943	8,959,498	55,235,703	114,845,086	42,803,994	23,203,347	180,852,427

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	9,687	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	13,785	11,090
1984	31,748	87,083	26,712	12,754	3,053,662	3,211,959	26,489	10,112	6,268
1985	53,243	56,733	13,685	6,934	582,927	713,522	7,220	9,762	7,688
1986	73,979	201,509	50,668	19,223	1,282,469	1,627,848	8,902	25,024	20,503
1987	(7,829)	116,268	40,009	15,946	518,349	682,743	12,744	18,927	56,042
1988	(149,385)	631,804	(406,398)	(137,353)	923,622	862,290	9,833	(119,741)	(60,639)
1989	39,652	686,131	232,852	80,090	575,855	1,614,580	5,279	91,501	278,061
1990	23,631	246,845	75,722	27,931	447,117	821,246	5,751	40,824	2,012,120
1991	4,916,156	402,761	98,879	35,872	511,585	5,965,253	4,588	43,145	41,361
1992	(756,456)	547,435	212,924	74,803	397,229	475,935	3,566	104,182	109,540
1993	110,233	724,930	186,271	70,815	720,283	1,812,532	15,016	101,634	90,929
1994	1,153,379	299,686	65,670	28,642	764,599	2,311,976	6,770	42,455	40,696
1995	285,776	441,479	130,761	58,640	1,914,186	2,830,842	12,510	49,839	43,180
1996	32,993	(100,407)	35,304	11,045	624,399	603,334	20,053	73,617	48,328
1997	74,913	550,070	102,329	39,776	5,362,712	6,129,800	17,676	69,288	51,022
1998	486,715	431,234	106,842	554,012	7,811,906	9,390,709	189	849	849
1999	113,111	349,381	7,355	1,072,285	8,571,304	10,113,436	189	849	849
2000	51,478	40,360	3,583	520,819	3,353,968	3,970,208	94	471	471
2001	0	0	0	0	0	0	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	21,325,346	31,858,893	22,536,570	7,984,764	61,915,185	145,620,758	863,032	13,000,906	11,031,598

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	15,334	28,253	21,885	25,515	(1,074,560)	28,987	34,617	(1,142,332)
1982	8,237	6,608	7,680	8,346	16,339	(745,914)	9,886	29,393	(804,147)
1983	14,488	9,820	14,285	13,107	35,872	419,753	17,478	24,992	116,008
1984	7,533	29,139	93,958	52,373	22,732	60,234	80,335	66,264	64,859
1985	9,215	6,949	5,263	8,013	8,875	(49,408)	9,523	5,867	54,782
1986	22,335	16,796	16,540	25,300	20,483	141,132	26,384	14,191	154,203
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)	365,453	(75,276)	(75,307)	356,362
1989	70,153	65,216	63,382	120,925	73,037	2,824,622	119,559	36,660	2,999,492
1990	32,485	26,992	25,080	44,767	33,766	625,815	41,883	14,344	420,419
1991	36,897	32,205	30,155	55,132	34,150	425,747	50,354	12,119	356,163
1992	103,660	100,217	98,594	192,732	98,197	993,886	185,659	9,513	389,309
1993	90,291	70,131	63,247	118,440	80,530	687,462	109,792	38,960	942,212
1994	65,737	29,221	26,997	50,234	35,154	400,534	44,481	17,426	324,942
1995	435,776	32,417	25,483	49,770	41,758	524,744	48,754	29,142	451,123
1996	296,159	43,193	25,837	70,074	20,530	334,891	22,654	12,997	195,754
1997	87,215	41,990	29,691	66,603	36,623	397,391	43,625	25,706	772,807
1998	273,376	660	660	943	566	413,128	1,037	471	42,624
1999	849	660	660	943	566	627,566	1,037	471	5,375
2000	471	377	377	471	283	306,758	566	283	2,735
2001	0	0	0	0	0	0	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	10,475,267	12,523,621	11,159,376	8,203,698	15,984,413	66,323,307	9,008,772	7,098,455	46,205,098

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	South San Joaquin (contd.)		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)
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	633,284	339,536	10,831	37,085
1980	3,772,498	7,372,362	17,433,610	6,046	17,439,656	1,141,829	1,073,430	3,604	308,188
1981	(2,526,104)	(4,557,717)	(3,848,206)	6,908	(3,841,298)	1,226,519	845,702	4,498	48,625
1982	(1,850,736)	(3,296,600)	11,370,111	6,054	11,376,165	7,054,354	746,900	3,920	33,869
1983	166,301	864,934	8,862,914	8,269	8,871,183	11,038,206	64,660	2,596	40,793
1984	123,150	643,446	3,227,937	31,701	3,259,638	8,382,266	309,491	3,124	17,505
1985	82,117	165,866	1,926,289	10,460	1,936,749	5,269,457	252,781	3,885	72,697
1986	186,674	678,467	1,381,955	33,788	1,415,743	2,093,799	2,324,852	4,261	2,510,915
1987	194,936	718,184	671,183	13,807	684,990	1,348,349	47,754	4,684	623,872
1988	727,617	572,752	3,053,309	(49,734)	3,003,575	848,011	(97,836)	13,409	(64,075)
1989	6,059,492	12,807,379	872,784	64,660	937,444	376,980	218,892	50,953	150,246
1990	617,134	3,941,380	799,285	25,062	824,347	199,673	(398,229)	35,291	(586,104)
1991	779,646	1,901,662	710,744	33,426	744,170	273,090	38,269	81,608	(165,185)
1992	734,428	3,123,483	752,669	26,383	779,052	621,517	387,469	86,644	228,292
1993	857,039	3,265,683	1,223,403	35,370	1,258,773	1,131,166	249,370	72,746	111,781
1994	853,328	1,937,975	806,214	16,681	822,895	998,126	164,210	60,147	51,511
1995	629,219	2,373,715	1,539,012	19,443	1,558,455	390,433	157,481	45,990	92,925
1996	295,754	1,459,841	2,412,613	10,774	2,423,387	91,662	69,122	22,131	36,049
1997	413,015	2,052,652	888,769	17,482	906,251	127,791	89,870	13,140	62,223
1998	571,552	1,306,904	774,373	352,210	1,126,583	20,557	38,003	0	24,895
1999	270,830	910,844	415,846	79,212	495,058	14,616	32,251	0	23,009
2000	3,112	316,469	204,681	0	204,681	5,375	18,200	0	13,579
2001	0	0	170,639	0	170,639	0	0	0	0
2002	0	0	110,454	0	110,454	0	0	0	0
2003	0	0	50,269	0	50,269	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	74,728,959	286,606,502	249,895,282	54,965,368	304,860,650	50,709,242	23,874,377	719,570	18,379,357

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	210,594	1,712,053	57,463	131,076
1979	36,225	18,948	10,675	560,506	10,634	103,615	1,761,339	29,960	80,482
1980	284,545	133,526	121,171	2,239,224	64,447	559,963	5,929,927	31,462	181,638
1981	32,214	13,223	6,466	(774,614)	160,862	203,941	1,767,436	5,864	69,031
1982	77,988	13,158	14,459	432,274	437,307	79,819	8,894,048	9,224	159,280
1983	58,714	25,900	10,363	451,428	2,198,410	58,989	13,950,059	4,304	528,764
1984	35,378	845,423	6,052	(38,439)	1,369,400	34,764	10,964,964	3,850	270,455
1985	(201,541)	(432,054)	1,985,548	663,873	974,482	51,634	8,640,762	5,555	97,740
1986	(1,918,884)	(1,245,542)	3,328,851	1,200,178	233,873	51,994	8,584,297	9,927	233,121
1987	(306,867)	78,262	66,943	4,567,279	159,447	91,223	6,680,946	4,908	262,960
1988	(48,680)	44,804	353,769	1,471,811	598,571	197,761	3,317,545	7,358	678,662
1989	184,575	173,287	538,135	4,837,570	1,574,239	433,072	8,537,949	8,092	160,042
1990	(394,531)	(585,371)	(86,909)	9,912,255	1,562,744	343,467	10,002,286	176,839	198,933
1991	276	(123,312)	(11,930)	9,167,298	3,977,941	139,124	13,377,179	202,297	412,901
1992	340,998	(261,533)	76,195	5,399,784	9,256,005	129,623	16,264,994	334,997	(836,716)
1993	181,681	134,625	49,486	2,226,947	17,439,915	159,211	21,756,928	1,506,787	5,750,553
1994	114,387	65,488	26,717	978,792	8,666,879	81,869	11,208,126	2,104,588	3,804,967
1995	121,499	66,503	30,918	1,109,664	6,312,630	123,653	8,451,696	3,434,423	832,531
1996	49,060	44,376	17,793	1,707,267	(752,189)	96,266	1,381,537	19,007,654	(2,817,397)
1997	33,453	54,741	27,262	1,160,045	2,797,202	102,658	4,468,385	7,592,505	2,693,369
1998	41,775	11,882	6,790	3,942,211	1,188,086	76,194	5,350,393	2,640	4,980,266
1999	10,656	10,467	3,678	5,235,064	818,618	63,652	6,212,011	1,320	641,900
2000	5,658	5,564	1,697	2,307,427	1,132	25,461	2,384,093	0	315,999
2001	0	0	0	0	0	0	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	17,981,196	8,709,017	12,973,077	139,476,679	63,202,195	51,457,307	387,482,017	59,144,300	56,142,546

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	348,780	838,298	1,427,190	2,219,135	6,694,615	57,817	149,932
1979	29,723	19,225	227,127	386,517	940,013	2,168,382	19,813,742	597,858	331,313
1980	137,833	154,821	1,077,900	1,583,654	1,276,793	4,108,143	24,537,814	550,337	204,751
1981	28,815	22,654	61,349	187,713	(711,751)	2,699,873	19,806,531	94,944	28,852
1982	16,069	58,900	55,841	299,314	(465,217)	351,251	17,964,617	215,678	42,587
1983	18,213	89,581	(264,804)	376,058	100,394	180,971	6,751,649	220,029	24,295
1984	14,462	12,259	49,547	350,573	71,759	68,930	2,870,259	335,942	17,285
1985	17,816	11,481	54,070	186,662	142,244	25,386	2,126,670	102,366	21,971
1986	31,564	25,037	86,794	386,443	133,914	62,294	274,660	141,894	36,149
1987	17,141	8,005	45,528	338,542	13,936	453,949	711,773	192,511	27,931
1988	41,892	21,113	90,784	839,809	559,695	118,010	1,660,959	203,130	95,930
1989	28,708	12,619	51,556	261,017	236,644	430,662	584,186	241,811	97,472
1990	27,047	12,631	54,595	470,045	198,677	311,892	362,683	812,508	54,029
1991	142,148	15,533	62,817	835,696	220,853	344,525	453,436	1,132,538	55,216
1992	35,031	14,261	71,695	(380,732)	542,293	296,120	467,715	4,404,283	50,994
1993	44,300	27,047	162,854	7,491,541	464,987	320,182	643,189	3,361,457	74,199
1994	16,351	11,673	54,581	5,992,160	203,666	231,527	362,717	306,148	33,758
1995	35,402	28,202	164,254	4,494,812	344,358	392,647	536,253	468,656	34,007
1996	77,023	73,236	343,686	16,684,202	150,408	160,958	425,813	201,132	15,728
1997	48,995	18,601	259,241	10,612,711	285,015	70,010	415,192	268,216	29,189
1998	322,412	175,398	50,356	5,531,072	35,928	201,896	2,295,451	137,018	11,957
1999	205,291	9,430	47,621	905,562	15,465	204,442	9,633,405	408,413	75
2000	12,919	189	24,046	353,153	11,599	11,787	7,072	387,384	38
2001	0	0	0	0	0	0	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	24,706,949	23,770,972	54,594,261	218,359,028	36,076,036	32,157,373	133,449,350	63,811,662	75,007,903

a) Includes excess capacity costs (not shown in Table B-9) allocated to MWDSC in the following years and repaid under Article 24(c) of its contract: 1970 - $362,000; 1971 - $6,198,000; 1972- $139.000.

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	West Branch (continued)		Coastal Branch					Total	Grand Total
	Reach 30 (65)	Subtotal (66)	Reach 31a (67)	Reach 33a (68)	Reach 34 (69)	Reach 35 (70)	Subtotal (71)	(72)	(73)
1952	1,408	5,655	0	0	0	0	0	98,857	99,353
1953	4,346	17,457	0	0	0	0	0	309,387	311,812
1954	5,743	23,074	0	0	0	0	0	394,688	402,143
1955	1,943	7,809	0	0	0	0	0	159,842	169,342
1956	2,077	8,348	0	0	0	0	0	255,679	351,551
1957	7,684	30,877	0	0	0	0	0	708,753	1,464,452
1958	13,931	55,142	0	0	0	0	0	1,331,616	2,286,623
1959	44,384	134,727	28,046	49,114	7,441	8,236	92,837	2,096,392	2,967,412
1960	84,703	255,409	34,404	70,450	8,507	14,265	127,626	2,937,049	4,660,833
1961	123,330	239,953	13,801	17,868	1,501	3,931	37,101	4,650,264	8,545,244
1962	348,366	671,447	10,121	7,798	524	1,689	20,132	5,827,774	8,875,171
1963	521,491	1,167,566	20,470	14,299	880	2,943	38,592	18,981,487	24,610,278
1964	1,372,464	2,232,275	315,418	26,963	1,687	5,639	349,707	31,550,813	41,736,060
1965	3,383,950	4,943,858	747,023	36,178	2,118	7,060	792,379	57,936,405	62,664,743
1966	9,364,753	14,872,117	2,258,915	35,864	1,736	5,764	2,302,279	124,748,128	129,110,330
1967	17,618,827	53,187,979	6,310,419	38,331	1,891	6,213	6,356,854	187,465,580	194,146,365
1968	15,736,691	57,595,765	2,707,580	30,784	1,324	4,369	2,744,057	192,593,079	197,978,911
1969	16,228,175	34,690,908	423,797	26,549	907	2,905	454,158	182,530,023	184,473,490
1970	22,330,328	50,497,652	269,194	24,368	851	2,787	297,200	206,720,774	207,082,650
1971	16,890,503	40,115,145	164,446	32,230	1,315	3,804	201,795	158,414,033	158,624,739
1972	3,818,001	2,874,264	131,332	17,601	522	1,660	151,115	68,228,670	68,362,291
1973	13,426,222	25,999,878	182,493	16,154	542	1,758	200,947	45,110,823	45,263,853
1974	2,988,318	4,334,592	190,866	18,799	463	1,405	211,533	24,036,199	24,402,166
1975	1,808,235	4,782,778	64,582	36,012	2,255	6,656	109,505	21,065,768	21,318,838
1976	1,253,067	4,931,230	198,266	68,898	5,088	14,988	287,240	17,183,961	17,492,910
1977	345,023	7,238,418	918,473	81,305	1,834	5,387	1,006,999	15,165,801	15,544,382
1978	766,368	11,315,057	52,994	83,300	1,302	3,852	141,448	18,665,734	19,123,768
1979	282,145	24,133,453	38,182	108,951	1,505	4,433	153,071	31,209,967	31,865,211
1980	2,055,206	32,733,044	189,070	380,825	1,183	3,523	574,601	73,911,613	75,007,345
1981	275,460	22,193,909	19,897	(152,747)	1,458	4,335	(127,057)	15,289,907	15,786,031
1982	351,376	18,460,292	(16,381)	(91,659)	619	1,862	(105,559)	38,437,548	39,886,899
1983	566,545	7,843,883	85,496	72,063	825	2,475	160,859	35,008,715	38,348,083
1984	1,118,954	4,483,129	28,568	59,125	1,019	3,037	91,749	24,654,827	30,582,986
1985	284,243	2,702,880	36,834	59,367	2,141	6,344	104,686	15,173,298	28,795,924
1986	213,353	862,264	82,358	228,184	17,489	51,358	379,389	14,432,489	44,152,966
1987	158,313	1,558,413	53,817	1,066,263	92,531	273,036	1,485,647	13,079,741	35,700,213
1988	222,068	2,859,792	205,878	1,186,711	99,484	293,683	1,785,756	16,426,369	23,574,223
1989	148,674	1,739,449	89,607	907,369	77,304	228,092	1,302,372	34,725,102	37,611,792
1990	118,083	1,857,872	127,223	1,092,646	103,781	277,872	1,601,522	35,503,941	37,389,462
1991	229,367	2,435,935	164,911	1,635,398	123,575	363,800	2,287,684	41,715,908	43,218,966
1992	211,561	5,972,966	183,830	3,076,176	176,672	478,156	3,914,834	36,896,825	37,641,602
1993	296,349	5,160,363	344,928	10,811,749	1,065,017	629,724	12,851,418	56,597,509	57,387,229
1994	168,426	1,306,242	282,151	44,382,479	4,507,725	2,366,465	51,538,820	76,500,613	77,013,071
1995	304,983	2,080,904	1,195,632	106,360,975	10,206,029	9,806,669	127,569,305	151,171,875	151,680,732
1996	98,885	1,052,924	1,152,010	61,066,122	29,662,738	12,227,999	104,108,869	128,701,585	128,985,910
1997	225,311	1,292,933	674,911	19,292,602	7,961,484	3,410,515	31,339,512	59,085,671	59,564,021
1998	776,560	3,458,810	25,000	7,234,200	0	0	7,259,200	35,559,881	35,607,551
1999	863,128	11,124,928	0	0	0	0	0	32,232,298	32,257,892
2000	423,313	841,193	0	0	0	0	0	10,259,708	10,280,175
2001	0	0	0	0	0	0	0	321,107	341,574
2002	0	0	0	0	0	0	0	207,851	221,098
2003	0	0	0	0	0	0	0	94,595	100,624
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	137,882,634	478,384,958	20,006,562	259,509,664	54,145,267	30,538,689	364,200,182	2,366,366,522	2,515,071,290

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	Upper Feather Division (1)	North Bay Aqueduct					South Bay Aqueduct			
		Reach 1 (2)	Reach 2 (3)	Reach 3A (4)	Reach 3B (5)	Total (6)	Reach 1 (7)	Reach 2 (8)	Reach 4 (9)	Reach 5 (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	37,396	5,522	0	0
1963	0	0	0	0	0	0	147,719	20,639	0	0
1964	0	0	0	0	0	0	149,750	15,574	19,405	0
1965	0	0	0	0	0	0	259,939	45,718	46,485	0
1966	0	0	0	0	0	0	270,890	23,799	63,921	0
1967	0	0	0	0	0	0	438,050	32,798	108,127	0
1968	0	0	0	0	130	130	410,919	44,277	66,973	706
1969	0	0	0	0	80,875	80,875	487,377	48,339	75,644	706
1970	0	0	0	0	94,872	94,872	381,734	44,852	64,833	71,376
1971	54	0	0	0	45,579	45,579	357,850	25,666	50,344	38,735
1972	40	0	0	0	37,895	37,895	347,941	30,606	56,800	100,106
1973	1	0	0	0	32,993	32,993	386,897	36,172	58,288	28,810
1974	143	0	0	0	46,498	46,498	456,381	57,081	83,120	61,623
1975	1,069	0	0	0	37,707	37,707	624,989	46,111	81,361	36,682
1976	139	0	0	0	60,786	60,786	614,362	47,862	123,838	91,096
1977	892	0	0	0	78,400	78,400	511,065	48,926	104,280	102,083
1978	39	0	0	0	56,318	56,318	671,195	125,224	176,855	50,285
1979	3,235	0	0	0	73,852	73,852	650,826	76,849	212,826	91,384
1980	416	0	0	0	81,769	81,769	1,128,840	212,974	242,118	110,786
1981	3,847	0	0	0	100,757	100,757	882,264	130,127	167,121	204,670
1982	10,956	0	0	0	192,039	192,039	1,157,685	141,702	249,398	116,959
1983	(422)	0	0	0	80,247	80,247	1,258,815	84,370	373,905	151,943
1984	643	0	0	0	139,157	139,157	1,999,704	113,797	340,347	34,715
1985	2,599	0	0	0	259,697	259,697	2,047,112	207,479	427,930	247,927
1986	2,595	0	0	0	229,516	229,516	1,834,592	285,914	305,164	159,039
1987	2,595	0	0	0	309,160	309,160	2,097,620	163,720	400,565	282,179
1988	2,600	(4)	339	(19)	331,276	331,592	2,077,515	186,335	300,025	371,004
1989	2,672	469,212	178,152	236,076	373,313	1,256,753	2,168,079	163,564	320,874	497,170
1990	2,687	549,866	244,894	121,678	424,742	1,341,180	2,217,422	251,437	355,035	570,371
1991	2,730	648,872	302,270	204,690	427,286	1,583,118	1,800,195	152,458	95,677	93,229
1992	2,774	440,693	189,347	263,906	279,550	1,173,496	2,061,880	405,992	409,496	363,045
1993	2,529	442,714	294,412	217,020	290,893	1,245,039	3,935,215	621,725	480,830	400,896
1994	3,058	426,867	198,392	204,856	364,474	1,194,589	4,665,796	302,211	404,832	407,415
1995	3,210	425,954	283,135	149,749	294,023	1,152,861	3,836,091	317,238	566,879	331,271
1996	3,370	788,827	271,595	235,668	256,941	1,553,031	3,499,403	252,904	661,948	490,253
1997	3,437	529,568	238,987	222,332	294,436	1,285,323	3,291,652	215,993	628,955	303,838
1998	3,506	884,330	280,241	411,684	371,463	1,947,718	3,706,342	447,163	668,422	536,009
1999	3,610	888,527	240,018	426,371	382,519	1,937,435	3,781,592	418,794	654,755	575,024
2000	3,683	905,872	247,105	439,552	374,005	1,966,534	3,771,903	429,236	676,383	588,498
2001	3,683	926,705	253,622	449,426	382,317	2,012,070	3,858,997	440,348	693,822	608,590
2002	3,683	928,735	254,179	450,396	383,132	2,016,442	3,867,004	441,303	695,337	611,332
2003	3,683	928,852	254,182	450,455	383,163	2,016,652	3,867,113	441,326	695,403	611,250
2004	3,683	930,345	254,191	451,235	383,566	2,019,337	3,868,401	441,456	695,766	613,089
2005	3,683	928,072	254,177	450,048	382,955	2,015,252	3,866,440	441,258	695,212	610,290
2006	3,683	927,931	254,177	449,974	382,916	2,014,998	3,866,316	441,246	695,178	610,116
2007	3,683	928,286	254,179	450,160	383,013	2,015,638	3,866,625	441,277	695,266	610,560
2008	3,683	928,637	254,181	450,343	383,107	2,016,268	3,866,927	441,307	695,350	610,984
2009	3,683	928,151	254,178	450,089	382,975	2,015,393	3,866,506	441,265	695,231	610,386
2010	3,683	928,675	254,182	450,362	383,117	2,016,336	3,866,958	441,310	695,358	611,030
2011	3,683	928,699	254,182	450,375	383,124	2,016,380	3,866,979	441,312	695,365	611,060
2012	3,683	928,837	254,183	450,447	383,161	2,016,628	3,867,098	441,324	695,397	611,230
2013	3,683	929,513	254,187	450,800	383,343	2,017,843	3,867,681	441,383	695,563	612,060
2014	3,683	930,698	254,195	451,419	383,662	2,019,974	3,868,705	441,486	695,851	613,521
2015	3,683	930,778	254,196	451,460	383,685	2,020,119	3,868,773	441,494	695,870	613,618
2016	3,683	930,786	254,196	451,464	383,687	2,020,133	3,868,781	441,494	695,873	613,628
2017	3,683	930,882	254,197	451,514	383,713	2,020,306	3,868,864	441,502	695,896	613,746
2018	3,683	930,941	254,197	451,545	383,728	2,020,411	3,868,914	441,507	695,910	613,818
2019	3,683	930,942	254,198	451,546	383,729	2,020,415	3,868,915	441,507	695,910	613,819
2020	3,683	930,716	254,197	451,427	383,667	2,020,007	3,868,719	441,487	695,855	613,541
2021	3,683	930,673	254,196	451,405	383,657	2,019,931	3,868,682	441,484	695,844	613,487
2022	3,683	930,842	254,197	451,492	383,702	2,020,233	3,868,827	441,499	695,886	613,695
2023	3,683	930,809	254,197	451,476	383,694	2,020,176	3,868,801	441,496	695,878	613,656
2024	3,683	930,701	254,197	451,419	383,663	2,019,980	3,868,706	441,487	695,851	613,522
2025	3,683	930,831	254,197	451,487	383,699	2,020,214	3,868,818	441,498	695,883	613,682
2026	3,683	930,625	254,196	451,379	383,643	2,019,843	3,868,640	441,480	695,832	613,430
2027	3,683	930,682	254,196	451,410	383,660	2,019,948	3,868,690	441,484	695,847	613,500
2028	3,683	930,639	254,196	451,387	383,648	2,019,870	3,868,652	441,481	695,836	613,446
2029	3,683	930,615	254,196	451,374	383,640	2,019,825	3,868,632	441,479	695,831	613,416
2030	3,683	930,460	254,195	451,293	383,599	2,019,547	3,868,498	441,465	695,793	613,225
2031	3,683	930,569	254,196	451,350	383,628	2,019,743	3,868,591	441,475	695,819	613,359
2032	3,683	930,386	254,194	451,255	383,581	2,019,416	3,868,435	441,459	695,774	613,135
2033	3,683	930,573	254,196	451,352	383,629	2,019,750	3,868,596	441,475	695,820	613,364
2034	3,683	930,451	254,195	451,288	383,597	2,019,531	3,868,489	441,464	695,790	613,214
2035	3,683	930,509	254,195	451,319	383,613	2,019,636	3,868,540	441,469	695,805	613,285
Total	197,612	39,947,844	11,865,002	18,918,734	19,923,581	90,655,161	195,799,310	21,729,935	34,470,661	28,948,917

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	South Bay Aqueduct (continued)					California Aqueduct			
						North San Joaquin Division			
	Reach 6 (11)	Reach 7 (12)	Reach 8 (13)	Reach 9 (14)	Total (15)	Reach 1 (16)	Reach 2A (17)	Reach 2B (18)	Subtotal (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	42,918	0	0	0	0
1963	0	0	0	0	168,358	0	0	0	0
1964	0	0	0	0	184,729	0	0	0	0
1965	2,634	6,490	4,704	12,904	378,874	0	0	0	0
1966	4,707	10,328	9,233	25,519	408,397	0	0	0	0
1967	2,712	7,659	10,812	34,347	634,505	0	0	0	0
1968	3,109	7,960	10,166	40,372	584,482	1,001,998	228,359	103,116	1,333,473
1969	3,944	5,975	8,795	38,566	669,346	933,116	301,596	188,194	1,422,906
1970	2,464	(1,991)	6,870	28,210	598,348	971,602	306,198	151,539	1,429,339
1971	3,116	9,394	9,895	31,068	526,068	1,103,021	254,786	113,694	1,471,501
1972	5,125	10,247	12,054	44,699	607,578	1,107,855	230,906	110,109	1,448,870
1973	4,178	7,500	4,890	43,816	570,551	1,150,864	221,445	100,221	1,472,530
1974	7,812	7,564	5,523	48,054	727,158	1,272,034	231,383	117,156	1,620,573
1975	18,120	14,683	18,325	68,377	908,648	1,434,736	455,110	201,075	2,090,921
1976	10,873	5,557	19,920	49,921	963,429	1,519,801	217,348	453,400	2,190,549
1977	(240)	2,228	8,391	89,579	866,312	1,913,643	292,380	196,564	2,402,587
1978	(1,404)	16,766	(5,313)	104,078	1,137,686	1,860,459	306,556	188,229	2,355,244
1979	1,269	29,294	7,351	106,835	1,176,634	1,848,109	231,331	145,202	2,224,642
1980	3,621	24,270	17,404	110,852	1,850,865	2,365,294	472,692	247,617	3,085,603
1981	4,038	20,109	17,586	98,143	1,524,058	2,649,349	435,371	154,231	3,238,951
1982	2,236	22,870	21,919	202,590	1,915,359	3,198,257	599,785	244,662	4,042,704
1983	(2,047)	48,781	45,573	216,434	2,177,774	4,248,368	802,903	273,079	5,324,350
1984	4,449	44,017	23,563	455,058	3,015,650	4,380,287	810,669	291,622	5,482,578
1985	13,097	74,565	57,920	238,066	3,314,096	5,147,216	811,987	278,258	6,237,461
1986	11,614	31,084	46,864	363,357	3,037,628	5,375,146	995,477	391,402	6,762,025
1987	15,273	25,182	37,949	416,375	3,438,863	5,272,766	968,481	366,208	6,607,455
1988	30,217	41,060	49,171	335,508	3,390,835	5,350,857	822,763	360,524	6,534,144
1989	9,744	54,885	114,280	179,405	3,508,001	5,769,203	851,131	907,895	7,528,229
1990	31,160	69,415	119,305	247,772	3,861,917	6,744,332	1,063,790	882,506	8,690,628
1991	22,425	(18,731)	99,537	261,989	2,506,779	6,734,009	1,053,278	578,634	8,365,921
1992	26,793	332,064	98,676	186,642	3,884,588	9,396,597	1,419,526	673,814	11,489,937
1993	24,844	181,583	94,156	316,018	6,055,267	10,312,404	1,371,618	903,531	12,587,553
1994	28,395	90,808	81,005	416,129	6,396,591	8,430,536	1,326,146	804,892	10,561,574
1995	29,340	64,090	80,436	373,895	5,599,240	10,099,713	2,385,279	962,647	13,447,639
1996	(1,029)	60,510	11,284	310,268	5,285,541	10,162,644	2,605,367	629,739	13,397,750
1997	13,808	83,719	16,415	314,093	4,868,473	10,333,929	1,241,260	1,644,865	13,220,054
1998	74,239	78,351	83,580	427,820	6,021,926	12,342,928	1,971,726	4,447,450	18,762,104
1999	78,582	82,322	88,298	417,913	6,097,280	12,873,712	2,058,496	692,782	15,624,990
2000	81,863	75,117	91,503	432,078	6,146,581	12,672,887	2,106,019	704,005	15,482,911
2001	84,030	77,118	93,901	443,629	6,300,435	12,093,552	2,133,781	719,710	14,947,043
2002	84,211	77,284	94,103	444,585	6,315,159	12,118,942	2,138,344	721,060	14,978,346
2003	84,211	77,284	94,103	444,585	6,315,275	12,119,494	2,139,912	721,540	14,980,946
2004	84,211	77,284	94,103	444,585	6,318,895	12,125,974	2,143,426	722,614	14,992,014
2005	84,211	77,284	94,103	444,585	6,313,383	12,116,106	2,138,086	720,982	14,975,174
2006	84,211	77,284	94,103	444,585	6,313,039	12,115,492	2,137,759	720,882	14,974,133
2007	84,211	77,284	94,103	444,585	6,313,911	12,117,041	2,138,644	721,152	14,976,837
2008	84,211	77,284	94,103	444,585	6,314,751	12,118,558	2,139,402	721,384	14,979,344
2009	84,211	77,284	94,103	444,585	6,313,571	12,116,446	2,138,269	721,038	14,975,753
2010	84,211	77,284	94,103	444,585	6,314,839	12,118,720	2,139,490	721,411	14,979,621
2011	84,211	77,284	94,103	444,585	6,314,899	12,118,823	2,139,549	721,429	14,979,801
2012	84,211	77,284	94,103	444,585	6,315,232	12,119,420	2,139,870	721,527	14,980,817
2013	84,211	77,284	94,103	444,585	6,316,870	12,122,355	2,141,455	722,011	14,985,821
2014	84,211	77,284	94,103	444,585	6,319,746	12,127,504	2,144,231	722,862	14,994,597
2015	84,211	77,284	94,103	444,585	6,319,938	12,127,848	2,144,417	722,918	14,995,183
2016	84,211	77,284	94,103	444,585	6,319,959	12,127,885	2,144,436	722,924	14,995,245
2017	84,211	77,284	94,103	444,585	6,320,191	12,128,299	2,144,661	722,992	14,995,952
2018	84,211	77,284	94,103	444,585	6,320,332	12,128,554	2,144,795	723,033	14,996,382
2019	84,211	77,284	94,103	444,585	6,320,334	12,128,559	2,144,798	723,034	14,996,391
2020	84,211	77,284	94,103	444,585	6,319,785	12,127,572	2,144,269	722,872	14,994,713
2021	84,211	77,284	94,103	444,585	6,319,680	12,127,387	2,144,170	722,841	14,994,398
2022	84,211	77,284	94,103	444,585	6,320,090	12,128,117	2,144,559	722,961	14,995,637
2023	84,211	77,284	94,103	444,585	6,320,014	12,127,981	2,144,487	722,939	14,995,407
2024	84,211	77,284	94,103	444,585	6,319,749	12,127,508	2,144,234	722,862	14,994,604
2025	84,211	77,284	94,103	444,585	6,320,064	12,128,071	2,144,535	722,954	14,995,560
2026	84,211	77,284	94,103	444,585	6,319,565	12,127,178	2,144,057	722,806	14,994,041
2027	84,211	77,284	94,103	444,585	6,319,704	12,127,430	2,144,190	722,848	14,994,468
2028	84,211	77,284	94,103	444,585	6,319,598	12,127,240	2,144,086	722,816	14,994,142
2029	84,211	77,284	94,103	444,585	6,319,541	12,127,133	2,144,028	722,798	14,993,959
2030	84,211	77,284	94,103	444,585	6,319,164	12,126,459	2,143,667	722,688	14,992,814
2031	84,211	77,284	94,103	444,585	6,319,427	12,126,934	2,143,921	722,766	14,993,621
2032	84,211	77,284	94,103	444,585	6,318,986	12,126,143	2,143,500	722,635	14,992,278
2033	84,211	77,284	94,103	444,585	6,319,438	12,126,953	2,143,931	722,769	14,993,653
2034	84,211	77,284	94,103	444,585	6,319,140	12,126,421	2,143,647	722,682	14,992,750
2035	84,211	77,284	94,103	444,585	6,319,282	12,126,676	2,143,782	722,724	14,993,182
Total	3,518,285	4,330,499	4,721,443	22,646,269	316,165,319	594,302,447	104,431,550	43,788,326	742,522,323

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	45,618	898,998	203,270	106,941	203,084	1,457,911	45,552	178,777	129,900
1979	224,103	842,453	143,968	99,639	180,692	1,490,855	69,973	150,687	129,764
1980	243,564	1,176,400	222,842	127,589	281,813	2,052,208	57,726	274,863	185,169
1981	266,787	1,063,949	192,600	90,373	1,611,941	3,225,650	80,124	198,366	144,296
1982	279,263	1,248,446	209,336	114,408	1,433,163	3,284,616	59,425	269,115	233,520
1983	215,365	1,952,342	339,626	131,313	2,143,589	4,782,235	49,448	383,441	223,042
1984	241,183	2,234,184	335,406	163,942	2,111,502	5,086,217	42,186	459,341	301,458
1985	322,373	2,890,224	363,611	177,564	1,607,182	5,360,954	64,900	548,818	254,943
1986	423,121	2,992,308	484,124	255,459	615,928	4,770,940	93,883	502,562	611,010
1987	369,845	3,049,199	423,193	235,867	441,028	4,519,132	114,401	417,613	450,572
1988	365,547	2,977,462	456,741	231,738	639,321	4,670,809	96,761	379,373	418,291
1989	263,083	3,196,621	394,550	333,469	634,206	4,821,929	83,320	389,354	400,529
1990	396,556	3,964,976	578,426	464,925	730,834	6,135,717	111,183	439,113	517,552
1991	250,805	4,353,791	543,667	728,037	765,536	6,641,836	104,393	496,745	465,894
1992	298,945	3,762,068	789,629	361,282	809,128	6,021,052	117,839	507,932	414,350
1993	438,946	4,378,441	1,008,823	552,026	734,897	7,113,133	230,338	746,153	490,471
1994	284,239	4,356,748	816,609	397,082	493,224	6,347,902	125,439	602,555	572,755
1995	123,377	5,035,538	1,067,051	440,526	1,357,072	8,023,564	185,795	656,531	431,509
1996	1,024,074	4,753,926	972,078	695,846	1,082,275	8,528,199	107,815	418,000	465,251
1997	827,989	5,301,510	899,810	299,445	818,736	8,147,490	111,425	407,489	587,962
1998	814,945	4,993,051	943,327	428,734	554,988	7,735,045	256,819	856,202	703,235
1999	746,852	5,473,660	907,185	475,195	708,720	8,311,612	251,338	914,142	750,246
2000	745,248	5,660,222	899,981	464,769	713,102	8,483,322	260,336	948,352	777,965
2001	745,396	4,907,583	892,353	420,736	574,844	7,540,912	254,900	970,844	795,991
2002	749,602	4,922,582	895,191	422,142	576,760	7,566,277	255,452	973,065	797,824
2003	751,265	4,924,572	895,191	422,680	577,440	7,571,148	255,469	973,951	798,654
2004	754,987	4,938,473	895,191	423,850	578,916	7,591,417	255,507	975,881	800,461
2005	749,327	4,917,312	895,191	422,071	576,670	7,560,571	255,450	972,948	797,714
2006	748,982	4,915,995	895,191	421,962	576,531	7,558,661	255,446	972,767	797,545
2007	749,920	4,919,348	895,191	422,258	576,906	7,563,623	255,456	973,255	798,003
2008	750,724	4,922,564	895,191	422,512	577,225	7,568,216	255,464	973,672	798,393
2009	749,521	4,918,035	895,191	422,132	576,748	7,561,627	255,452	973,049	797,808
2010	750,818	4,922,910	895,191	422,540	577,262	7,568,721	255,464	973,722	798,438
2011	750,880	4,923,134	895,191	422,559	577,286	7,569,050	255,465	973,752	798,469
2012	751,219	4,924,418	895,191	422,666	577,423	7,570,917	255,468	973,931	798,634
2013	752,898	4,930,704	895,191	423,195	578,088	7,580,076	255,485	974,800	799,449
2014	755,842	4,941,744	895,191	424,122	579,259	7,596,158	255,517	976,329	800,880
2015	756,040	4,942,482	895,191	424,183	579,337	7,597,233	255,518	976,431	800,976
2016	756,058	4,942,558	895,191	424,190	579,346	7,597,343	255,518	976,440	800,986
2017	756,297	4,943,447	895,191	424,264	579,441	7,598,640	255,521	976,564	801,101
2018	756,439	4,943,991	895,191	424,310	579,496	7,599,427	255,523	976,639	801,171
2019	756,445	4,944,004	895,191	424,312	579,498	7,599,450	255,523	976,640	801,172
2020	755,882	4,941,892	895,191	424,133	579,274	7,596,372	255,517	976,349	800,898
2021	755,776	4,941,494	895,191	424,101	579,233	7,595,795	255,515	976,295	800,848
2022	756,189	4,943,057	895,191	424,231	579,398	7,598,066	255,520	976,509	801,049
2023	756,111	4,942,765	895,191	424,207	579,367	7,597,641	255,519	976,469	801,012
2024	755,844	4,941,755	895,191	424,122	579,260	7,596,172	255,517	976,330	800,882
2025	756,165	4,942,960	895,191	424,223	579,387	7,597,926	255,520	976,496	801,037
2026	755,656	4,941,043	895,191	424,062	579,184	7,595,136	255,514	976,233	800,790
2027	755,797	4,941,583	895,191	424,108	579,242	7,595,921	255,515	976,306	800,859
2028	755,689	4,941,179	895,191	424,073	579,198	7,595,330	255,514	976,249	800,805
2029	755,628	4,940,949	895,191	424,055	579,174	7,594,997	255,514	976,218	800,777
2030	755,244	4,939,505	895,191	423,933	579,022	7,592,895	255,510	976,019	800,590
2031	755,513	4,940,522	895,191	424,018	579,129	7,594,373	255,513	976,159	800,721
2032	755,066	4,938,829	895,191	423,878	578,950	7,591,914	255,508	975,926	800,502
2033	755,524	4,940,562	895,191	424,021	579,133	7,594,431	255,513	976,165	800,725
2034	755,222	4,939,422	895,191	423,926	579,013	7,592,774	255,510	976,007	800,579
2035	755,365	4,939,966	895,191	423,971	579,070	7,593,563	255,511	976,082	800,649
Total	36,610,364	255,943,790	46,394,905	22,874,299	42,595,278	404,418,636	12,019,669	46,880,284	38,838,556

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	168,603	106,684	72,559	170,560	151,091	1,254,014	139,635	132,205	1,265,827
1979	175,116	85,947	56,339	174,153	150,038	1,490,447	201,923	260,973	1,216,127
1980	284,222	120,905	123,133	167,258	164,762	1,988,620	189,132	238,607	1,437,543
1981	200,043	77,034	33,420	113,272	171,780	1,733,613	163,799	161,086	1,791,906
1982	264,977	158,196	142,657	224,190	224,079	1,797,815	195,002	15,709	1,937,200
1983	308,758	136,321	124,693	203,707	217,278	2,424,368	199,754	181,913	2,552,311
1984	397,252	164,515	109,487	188,738	245,949	3,314,820	329,448	204,173	3,218,429
1985	346,406	252,692	206,439	239,944	360,512	3,475,225	237,078	180,032	3,437,371
1986	438,930	266,509	259,983	362,230	349,110	3,780,067	321,006	360,173	3,574,010
1987	493,355	336,865	329,103	472,030	325,052	3,675,296	463,843	241,675	4,026,041
1988	532,839	291,091	220,887	374,886	318,519	3,472,933	411,121	313,821	3,769,554
1989	732,759	267,827	207,065	595,435	380,482	3,523,404	334,430	221,280	3,759,227
1990	653,631	364,242	226,049	481,355	678,732	3,989,811	439,451	212,470	4,348,691
1991	716,251	328,635	269,859	371,251	433,251	4,295,509	424,597	273,103	4,554,095
1992	570,518	334,338	270,604	409,045	423,445	4,721,070	729,371	571,546	4,262,238
1993	723,590	414,030	278,586	497,235	594,534	5,211,746	663,604	423,461	5,290,123
1994	703,735	346,727	239,948	482,476	446,186	3,997,211	414,870	254,314	3,714,539
1995	881,384	404,707	241,367	622,447	506,791	4,590,597	311,232	317,142	3,967,023
1996	961,140	346,857	227,450	488,487	615,532	4,924,905	215,489	188,700	4,368,988
1997	1,596,937	286,675	206,785	449,167	493,197	5,004,590	243,223	242,490	4,137,177
1998	801,968	582,238	499,631	900,778	824,595	5,589,843	696,831	518,924	5,615,049
1999	1,462,696	569,030	533,727	808,348	848,103	6,085,390	712,794	510,384	5,682,450
2000	1,507,414	590,528	537,555	837,035	879,839	6,217,990	739,673	510,968	5,832,021
2001	808,195	604,711	549,338	857,656	900,844	6,059,067	756,786	522,699	5,934,934
2002	809,937	606,084	550,638	859,576	902,888	6,072,564	758,531	523,909	5,947,814
2003	809,937	606,576	551,433	860,089	903,613	6,074,123	759,522	524,634	5,948,397
2004	809,937	607,644	553,164	861,206	905,193	6,080,924	761,338	525,964	5,952,368
2005	809,937	606,020	550,532	859,510	902,793	6,070,575	758,579	523,945	5,946,322
2006	809,937	605,919	550,371	859,405	902,643	6,069,930	758,409	523,818	5,945,945
2007	809,937	606,190	550,809	859,688	903,043	6,071,594	758,875	524,160	5,946,902
2008	809,937	606,421	551,184	859,927	903,386	6,073,141	759,260	524,443	5,947,821
2009	809,937	606,075	550,622	859,566	902,873	6,070,926	758,672	524,013	5,946,529
2010	809,937	606,448	551,227	859,956	903,426	6,073,310	759,306	524,477	5,947,921
2011	809,937	606,465	551,255	859,974	903,451	6,073,419	759,335	524,498	5,947,985
2012	809,937	606,564	551,414	860,077	903,596	6,074,048	759,502	524,620	5,948,353
2013	809,937	607,045	552,195	860,581	904,309	6,077,124	760,320	525,219	5,950,151
2014	809,937	607,893	553,565	861,464	905,560	6,082,519	761,757	526,270	5,953,305
2015	809,937	607,949	553,657	861,522	905,643	6,082,880	761,853	526,340	5,953,515
2016	809,937	607,954	553,666	861,528	905,652	6,082,919	761,863	526,347	5,953,538
2017	809,937	608,022	553,778	861,601	905,752	6,083,353	761,979	526,433	5,953,792
2018	809,937	608,064	553,844	861,644	905,814	6,083,618	762,049	526,484	5,953,947
2019	809,937	608,065	553,845	861,645	905,816	6,083,625	762,050	526,486	5,953,950
2020	809,937	607,905	553,584	861,476	905,576	6,082,593	761,776	526,284	5,953,346
2021	809,937	607,873	553,534	861,444	905,531	6,082,398	761,724	526,246	5,953,233
2022	809,937	607,993	553,727	861,569	905,709	6,083,162	761,928	526,394	5,953,680
2023	809,937	607,970	553,692	861,546	905,675	6,083,019	761,891	526,368	5,953,597
2024	809,937	607,893	553,567	861,466	905,560	6,082,525	761,759	526,272	5,953,308
2025	809,937	607,985	553,715	861,562	905,698	6,083,113	761,915	526,385	5,953,652
2026	809,937	607,838	553,479	861,409	905,481	6,082,178	761,667	526,203	5,953,103
2027	809,937	607,880	553,545	861,451	905,540	6,082,441	761,737	526,254	5,953,258
2028	809,937	607,848	553,494	861,419	905,495	6,082,243	761,684	526,216	5,953,142
2029	809,937	607,830	553,467	861,401	905,469	6,082,131	761,655	526,195	5,953,076
2030	809,937	607,721	553,289	861,285	905,305	6,081,424	761,465	526,056	5,952,665
2031	809,937	607,799	553,413	861,366	905,421	6,081,922	761,597	526,153	5,952,956
2032	809,937	607,669	553,203	861,231	905,229	6,081,094	761,379	525,992	5,952,470
2033	809,937	607,802	553,418	861,370	905,425	6,081,942	761,602	526,157	5,952,966
2034	809,937	607,715	553,278	861,279	905,297	6,081,386	761,455	526,050	5,952,640
2035	809,937	607,756	553,344	861,321	905,357	6,081,650	761,526	526,100	5,952,796
Total	44,518,257	28,890,407	25,383,658	40,842,099	42,675,699	306,421,431	36,506,371	25,710,902	298,090,984

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	1,923,109	5,738,516	2,954,313	42,644	2,996,957	91,841	200,871	0	215,755
1979	1,798,698	5,960,185	3,539,402	46,010	3,585,412	99,734	307,659	0	261,425
1980	2,231,616	7,463,556	4,749,245	54,819	4,804,064	116,545	446,420	0	290,906
1981	2,745,576	7,614,315	5,464,962	64,906	5,529,868	316,675	585,358	0	325,381
1982	2,965,205	8,487,090	6,359,115	56,016	6,415,131	447,834	639,020	0	276,072
1983	4,304,781	11,309,815	14,158,557	96,401	14,254,958	345,246	564,768	0	368,192
1984	5,079,812	14,055,608	18,453,453	77,216	18,530,669	267,573	563,523	0	413,690
1985	5,700,316	15,304,676	18,201,918	137,928	18,339,846	298,927	475,002	0	450,422
1986	5,780,890	16,700,363	19,299,889	109,932	19,409,821	706,067	350,750	0	347,575
1987	5,518,481	16,864,327	16,712,595	98,306	16,810,901	1,260,548	558,178	0	817,806
1988	5,192,482	15,792,558	17,902,630	138,442	18,041,072	1,244,307	560,728	0	584,917
1989	5,469,641	16,364,753	17,668,750	88,462	17,757,212	1,058,878	282,571	0	366,295
1990	6,378,160	18,840,440	19,589,446	99,804	19,689,250	1,303,305	228,822	0	469,302
1991	5,785,558	18,519,141	19,799,759	131,442	19,931,201	1,430,327	665,280	0	1,024,884
1992	6,440,637	19,772,933	18,064,448	279,537	18,343,985	1,164,931	738,255	0	666,059
1993	7,625,546	23,189,417	19,222,592	199,409	19,422,001	1,875,408	606,966	0	1,232,222
1994	7,117,358	19,018,113	17,210,770	204,828	17,415,598	1,695,878	762,752	0	1,145,029
1995	6,523,646	19,640,171	19,153,899	191,194	19,345,093	1,281,732	609,855	0	1,938,928
1996	7,115,118	20,443,732	18,765,601	229,405	18,995,006	1,107,329	555,761	0	956,685
1997	7,363,657	21,130,774	19,654,022	194,774	19,848,796	1,267,536	722,654	0	940,574
1998	8,304,549	26,150,662	26,480,915	262,687	26,743,602	1,733,432	799,397	0	7,842,579
1999	8,575,818	27,704,466	25,562,138	321,372	25,883,510	1,834,492	891,795	0	1,442,354
2000	8,846,330	28,486,006	25,821,278	307,564	26,128,842	1,760,794	936,357	0	1,513,364
2001	8,993,413	28,009,378	26,080,404	315,139	26,395,543	1,804,009	940,606	0	1,456,738
2002	9,013,390	28,071,672	26,127,330	315,843	26,443,173	1,808,135	943,732	0	1,460,577
2003	9,017,385	28,083,783	26,128,205	316,154	26,444,359	1,808,865	953,662	0	1,466,959
2004	9,027,436	28,117,023	26,139,678	316,578	26,456,256	1,812,013	968,924	0	1,476,761
2005	9,012,151	28,066,476	26,122,208	315,933	26,438,141	1,807,219	945,689	0	1,461,832
2006	9,011,202	28,063,337	26,121,119	315,892	26,437,011	1,806,925	944,317	0	1,460,955
2007	9,013,724	28,071,636	26,123,856	316,002	26,439,858	1,807,695	948,260	0	1,463,485
2008	9,015,937	28,078,986	26,126,548	316,091	26,442,639	1,808,412	951,471	0	1,465,549
2009	9,012,666	28,068,188	26,122,805	315,954	26,438,759	1,807,388	946,555	0	1,462,391
2010	9,016,187	28,079,819	26,126,834	316,101	26,442,935	1,808,493	951,865	0	1,465,803
2011	9,016,347	28,080,352	26,127,018	316,109	26,443,127	1,808,541	952,129	0	1,465,974
2012	9,017,273	28,083,417	26,128,077	316,148	26,444,225	1,808,832	953,540	0	1,466,879
2013	9,021,812	28,098,427	26,133,270	316,341	26,449,611	1,810,261	960,516	0	1,471,362
2014	9,029,777	28,124,773	26,142,384	316,677	26,459,061	1,812,753	972,523	0	1,479,074
2015	9,030,310	28,126,531	26,142,994	316,702	26,459,696	1,812,917	973,260	0	1,479,550
2016	9,030,365	28,126,713	26,143,058	316,703	26,459,761	1,812,939	973,422	0	1,479,651
2017	9,031,007	28,128,840	26,143,791	316,729	26,460,520	1,813,139	974,353	0	1,480,249
2018	9,031,398	28,130,132	26,144,241	316,746	26,460,987	1,813,264	975,037	0	1,480,688
2019	9,031,407	28,130,161	26,144,250	316,746	26,460,996	1,813,264	975,006	0	1,480,669
2020	9,029,881	28,125,122	26,142,506	316,682	26,459,188	1,812,787	972,696	0	1,479,185
2021	9,029,596	28,124,174	26,142,179	316,669	26,458,848	1,812,700	972,323	0	1,478,947
2022	9,030,724	28,127,901	26,143,470	316,718	26,460,188	1,813,056	974,034	0	1,480,047
2023	9,030,511	28,127,206	26,143,227	316,708	26,459,935	1,812,985	973,628	0	1,479,784
2024	9,029,784	28,124,800	26,142,393	316,677	26,459,070	1,812,757	972,564	0	1,479,100
2025	9,030,654	28,127,669	26,143,388	316,715	26,460,103	1,813,033	973,905	0	1,479,963
2026	9,029,270	28,123,102	26,141,806	316,655	26,458,461	1,812,599	971,818	0	1,478,622
2027	9,029,661	28,124,384	26,142,252	316,672	26,458,924	1,812,721	972,402	0	1,478,998
2028	9,029,370	28,123,416	26,141,919	316,660	26,458,579	1,812,626	971,907	0	1,478,678
2029	9,029,204	28,122,874	26,141,729	316,653	26,458,382	1,812,573	971,623	0	1,478,499
2030	9,028,162	28,119,428	26,140,536	316,608	26,457,144	1,812,247	970,052	0	1,477,489
2031	9,028,894	28,121,851	26,141,376	316,640	26,458,016	1,812,479	971,233	0	1,478,246
2032	9,027,672	28,117,812	26,139,977	316,587	26,456,564	1,812,097	969,364	0	1,477,046
2033	9,028,924	28,121,946	26,141,408	316,641	26,458,049	1,812,484	971,202	0	1,478,225
2034	9,028,101	28,119,234	26,140,467	316,605	26,457,072	1,812,229	969,969	0	1,477,435
2035	9,028,494	28,120,523	26,140,917	316,623	26,457,540	1,812,352	970,601	0	1,477,840
Total	453,560,532	1,400,338,849	1,304,056,009	14,848,316	1,318,904,325	86,452,322	47,730,453	0	76,383,281

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	120,667	109,320	71,798	2,212,806	72,179	638,918	3,734,155	67,186	1,159,951
1979	194,330	203,210	121,688	2,105,727	76,960	201,210	3,571,943	84,462	1,235,587
1980	237,440	156,905	117,357	2,671,145	147,009	688,457	4,872,184	72,651	1,532,542
1981	292,357	181,221	119,724	3,023,858	134,895	45,392	5,024,861	35,662	1,570,900
1982	330,816	186,291	125,561	3,255,292	299,712	624,015	6,184,613	26,852	1,822,263
1983	326,822	219,976	140,547	3,901,763	223,626	382,195	6,473,135	19,017	1,666,682
1984	330,203	267,077	146,984	4,788,357	59,337	1,106,756	7,943,500	11,319	2,327,093
1985	388,307	799,502	125,775	5,342,850	261,135	811,327	8,953,247	17,764	2,711,958
1986	315,442	242,085	178,795	6,191,109	156,053	515,535	9,003,411	31,012	2,776,172
1987	357,311	297,777	235,951	5,666,156	151,796	731,794	10,077,317	19,362	2,846,763
1988	399,837	331,057	149,812	6,936,724	253,901	969,568	11,430,851	36,587	3,091,106
1989	345,326	193,860	138,694	5,971,710	349,675	1,242,962	9,949,971	30,868	3,204,875
1990	202,206	273,629	49,080	6,860,282	436,781	1,891,346	11,714,753	25,489	3,337,846
1991	516,118	478,450	231,177	7,470,186	262,701	1,560,749	13,639,872	32,081	3,844,941
1992	696,480	585,117	168,220	7,114,779	317,026	637,627	12,088,494	55,765	4,040,310
1993	817,984	509,224	207,892	7,824,758	359,620	1,685,398	15,119,472	72,355	5,670,473
1994	956,509	872,851	241,346	8,713,740	1,220,928	1,258,788	16,867,821	105,325	6,821,719
1995	2,408,226	353,577	178,332	7,536,450	825,534	824,061	15,956,695	96,583	5,728,470
1996	2,094,047	682,402	131,339	9,482,272	831,216	(266,082)	15,574,969	154,945	5,152,344
1997	2,573,356	591,975	190,062	9,038,970	1,846,112	3,111,019	20,282,258	185,159	5,756,115
1998	781,743	669,174	381,256	8,563,625	1,343,749	1,472,620	23,587,575	176,854	4,806,962
1999	891,298	597,915	349,723	9,694,135	841,788	1,630,752	18,174,252	194,948	5,159,147
2000	934,269	625,772	348,252	9,191,869	441,953	1,712,426	17,465,056	98,678	5,282,886
2001	862,366	634,943	351,748	8,685,088	442,382	1,102,609	16,280,489	62,345	5,009,572
2002	864,923	636,707	352,818	8,705,546	442,848	735,246	15,950,532	62,478	5,020,174
2003	871,305	640,314	355,648	8,731,628	443,045	3,590,804	18,862,230	62,478	5,020,437
2004	881,107	645,855	359,997	8,772,338	445,628	(169,296)	15,193,327	62,478	5,023,879
2005	866,178	637,418	353,374	8,710,405	441,695	2,362,127	17,585,937	62,478	5,018,637
2006	865,301	636,923	352,986	8,706,700	441,450	2,189,737	17,405,294	62,478	5,018,311
2007	867,831	638,352	354,105	8,717,302	442,066	980,895	16,219,991	62,478	5,019,132
2008	869,895	639,518	355,025	8,725,786	442,672	2,528,884	17,787,212	62,478	5,019,939
2009	866,737	637,734	353,621	8,712,645	441,830	404,261	15,633,162	62,478	5,018,816
2010	870,149	639,662	355,134	8,726,823	442,737	2,283,259	17,543,925	62,478	5,020,026
2011	870,320	639,758	355,211	8,727,513	442,778	1,118,475	16,380,699	62,478	5,020,081
2012	871,225	640,271	355,613	8,731,272	443,016	2,493,956	17,764,604	62,478	5,020,399
2013	875,708	642,803	357,600	8,749,804	444,186	1,158,474	16,470,714	62,478	5,021,957
2014	883,420	647,163	361,020	8,781,861	446,237	1,549,618	16,933,669	62,478	5,024,691
2015	883,896	647,434	361,231	8,783,884	446,374	2,767,578	18,156,124	62,478	5,024,875
2016	883,997	647,490	361,277	8,784,257	446,388	571,491	15,960,912	62,478	5,024,894
2017	884,595	647,829	361,542	8,786,764	446,553	2,589,949	17,984,973	62,478	5,025,113
2018	885,034	648,078	361,737	8,788,522	446,655	1,222,303	16,621,318	62,478	5,025,249
2019	885,015	648,066	361,730	8,788,474	446,657	1,373,174	16,772,055	62,478	5,025,251
2020	883,531	647,228	361,069	8,782,314	446,264	2,473,678	17,858,752	62,478	5,024,727
2021	883,293	647,091	360,965	8,781,279	446,191	1,027,673	16,410,462	62,478	5,024,629
2022	884,393	647,714	361,452	8,785,838	446,481	2,529,124	17,922,139	62,478	5,025,017
2023	884,130	647,566	361,336	8,784,818	446,427	2,828,593	18,219,267	62,478	5,024,944
2024	883,446	647,178	361,034	8,781,951	446,239	(419,044)	14,965,225	62,478	5,024,694
2025	884,309	647,665	361,414	8,785,510	446,463	4,032,814	19,425,076	62,478	5,024,993
2026	882,968	646,908	360,819	8,779,939	446,106	275,173	15,654,952	62,478	5,024,517
2027	883,344	647,121	360,987	8,781,505	446,207	1,441,245	16,824,530	62,478	5,024,652
2028	883,024	646,940	360,846	8,780,216	446,132	2,478,998	17,859,367	62,478	5,024,552
2029	882,845	646,838	360,766	8,779,489	446,089	2,299,109	17,677,831	62,478	5,024,495
2030	881,835	646,266	360,316	8,775,291	445,820	730,636	16,099,952	62,478	5,024,137
2031	882,592	646,694	360,651	8,778,388	446,010	2,898,372	18,274,665	62,478	5,024,389
2032	881,392	646,018	360,123	8,773,419	445,694	198,835	15,563,988	62,478	5,023,969
2033	882,571	646,683	360,643	8,778,362	446,017	3,623,560	18,999,747	62,478	5,024,399
2034	881,781	646,236	360,294	8,775,064	445,805	320,178	15,688,991	62,478	5,024,116
2035	882,186	646,468	360,476	8,776,722	445,907	3,113,192	18,485,744	62,478	5,024,251
Total	47,987,880	32,517,248	17,223,726	459,064,578	26,990,226	86,004,677	880,354,391	4,025,745	262,221,225

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	836,539	2,298,958	1,174,722	342,702	267,310	415,708	17,764
1979	142,586	92,812	263,009	1,818,456	1,366,983	285,781	284,194	974,717	29,850
1980	158,340	129,897	1,122,322	3,015,752	1,698,253	224,454	455,621	874,406	288,303
1981	160,053	111,722	332,124	2,210,461	1,780,052	123,216	615,045	2,309,557	8,794
1982	205,350	135,463	1,530,845	3,720,773	1,922,046	190,480	702,262	2,223,146	414,230
1983	244,720	124,651	413,556	2,468,626	2,741,077	149,816	891,936	747,492	579,839
1984	240,496	190,924	770,804	3,540,636	3,464,467	80,998	2,360,918	543,274	719,165
1985	451,600	182,242	871,350	4,234,914	3,876,059	295,854	3,057,388	976,380	616,843
1986	439,048	256,526	983,200	4,485,958	3,791,858	457,661	2,899,985	1,481,302	1,033,007
1987	278,094	218,717	1,118,108	4,481,044	3,372,243	212,724	2,898,001	948,116	418,565
1988	271,950	200,872	1,179,150	4,779,665	3,470,596	254,979	3,032,038	885,047	457,792
1989	231,055	282,008	1,131,642	4,880,448	4,032,042	405,983	2,760,023	1,401,658	865,940
1990	437,789	308,121	1,538,732	5,647,977	4,042,781	383,652	3,225,236	3,155,697	752,853
1991	843,199	632,801	1,630,186	6,983,208	3,849,243	304,019	3,536,022	639,138	757,840
1992	281,848	5,636,602	1,102,494	11,117,019	4,274,367	328,739	3,887,088	1,022,615	874,682
1993	382,115	570,485	1,005,431	7,700,859	3,993,093	344,035	4,530,260	1,667,912	861,163
1994	617,249	415,663	1,020,565	8,980,521	3,632,905	297,214	3,349,524	1,875,406	861,652
1995	1,309,243	704,411	865,328	8,704,035	4,111,721	868,829	4,725,155	1,587,758	661,676
1996	979,671	1,006,633	1,147,819	8,441,412	4,633,223	1,025,686	3,703,441	4,477,966	687,422
1997	563,207	984,271	1,011,796	8,500,548	4,828,033	1,091,052	3,094,692	4,007,736	1,494,926
1998	562,224	1,175,414	1,827,915	8,549,369	6,234,941	509,083	2,927,852	4,224,935	766,554
1999	722,181	493,794	1,932,143	8,502,213	6,052,912	536,309	2,985,255	3,356,391	739,336
2000	734,538	425,219	1,993,472	8,534,793	5,856,467	558,605	2,840,686	3,224,682	674,127
2001	545,635	398,199	1,880,856	7,896,607	5,894,116	550,462	2,898,523	3,460,743	681,545
2002	546,810	399,056	2,002,847	8,031,365	5,905,850	552,646	2,904,266	3,268,996	682,400
2003	546,810	399,056	1,843,022	7,871,803	5,906,648	563,943	2,905,165	3,309,885	682,400
2004	546,810	399,056	1,190,899	7,223,122	5,909,859	580,488	2,910,001	3,366,218	682,400
2005	546,810	399,056	1,835,519	7,862,500	5,904,975	555,361	2,902,651	3,281,412	682,400
2006	546,810	399,056	1,710,553	7,737,208	5,904,673	553,799	2,902,185	3,275,587	682,400
2007	546,810	399,056	2,055,489	8,082,965	5,905,459	558,134	2,903,364	3,290,796	682,400
2008	546,810	399,056	2,233,811	8,262,094	5,906,188	561,567	2,904,475	3,302,365	682,400
2009	546,810	399,056	1,399,058	7,426,218	5,905,142	556,197	2,902,892	3,283,611	682,400
2010	546,810	399,056	1,697,692	7,726,062	5,906,269	561,977	2,904,594	3,303,737	682,400
2011	546,810	399,056	2,225,167	8,253,592	5,906,318	562,241	2,904,670	3,304,508	682,400
2012	546,810	399,056	1,633,760	7,662,503	5,906,613	563,761	2,905,116	3,309,717	682,400
2013	546,810	399,056	1,929,879	7,960,180	5,908,065	571,214	2,907,307	3,335,293	682,400
2014	546,810	399,056	1,866,156	7,899,191	5,910,608	584,294	2,911,150	3,379,920	682,400
2015	546,810	399,056	2,039,858	8,073,077	5,910,780	585,170	2,911,405	3,382,840	682,400
2016	546,810	399,056	1,701,307	7,734,545	5,910,797	585,261	2,911,436	3,383,356	682,400
2017	546,810	399,056	2,052,351	8,085,808	5,911,003	586,313	2,911,743	3,387,030	682,400
2018	546,810	399,056	2,140,556	8,174,149	5,911,128	586,959	2,911,938	3,389,506	682,400
2019	546,810	399,056	1,881,941	7,915,536	5,911,130	586,975	2,911,944	3,389,601	682,400
2020	546,810	399,056	2,476,119	8,509,190	5,910,644	584,469	2,911,211	3,381,250	682,400
2021	546,810	399,056	1,556,133	7,589,106	5,910,551	584,002	2,911,075	3,379,742	682,400
2022	546,810	399,056	1,667,634	7,700,995	5,910,913	585,853	2,911,618	3,386,056	682,400
2023	546,810	399,056	1,858,911	7,892,199	5,910,845	585,504	2,911,518	3,384,914	682,400
2024	546,810	399,056	2,055,640	8,088,678	5,910,611	584,307	2,911,166	3,380,710	682,400
2025	546,810	399,056	2,330,362	8,363,699	5,910,890	585,737	2,911,584	3,385,684	682,400
2026	546,810	399,056	1,485,395	7,518,256	5,910,448	583,464	2,910,917	3,377,825	682,400
2027	546,810	399,056	2,562,672	8,595,668	5,910,573	584,105	2,911,107	3,380,096	682,400
2028	546,810	399,056	1,695,632	7,728,528	5,910,479	583,626	2,910,965	3,378,410	682,400
2029	546,810	399,056	1,778,613	7,811,452	5,910,427	583,352	2,910,885	3,377,574	682,400
2030	546,810	399,056	1,925,470	7,957,951	5,910,093	581,641	2,910,381	3,371,573	682,400
2031	546,810	399,056	2,342,971	8,375,704	5,910,327	582,845	2,910,737	3,375,782	682,400
2032	546,810	399,056	1,600,343	7,632,656	5,909,937	580,841	2,910,143	3,368,750	682,400
2033	546,810	399,056	1,833,800	7,866,543	5,910,336	582,892	2,910,753	3,376,044	682,400
2034	546,810	399,056	2,465,382	8,497,842	5,910,074	581,544	2,910,351	3,371,294	682,400
2035	546,810	399,056	1,955,091	7,987,686	5,910,197	582,190	2,910,539	3,373,092	682,400
Total	30,229,220	28,610,645	95,579,603	420,666,438	296,924,798	30,581,186	161,879,418	163,434,912	38,843,206

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	West Branch (contd.)		Coastal Branch					Total (72)	Grand Total (73)
	Reach 30 (65)	Subtotal (66)	Reach 31A (a (67)	Reach 33A (68)	Reach 34 (69)	Reach 35 (70)	Subtotal (71)		
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	42,918
1963	0	0	0	0	0	0	0	0	168,358
1964	0	0	0	0	0	0	0	0	184,729
1965	0	0	0	0	0	0	0	0	378,874
1966	0	0	0	0	0	0	0	0	408,397
1967	0	0	0	0	0	0	0	0	634,505
1968	0	0	0	0	0	0	0	2,160,548	2,745,160
1969	0	0	509,728	0	0	0	509,728	3,324,718	4,074,939
1970	0	0	609,988	0	0	0	609,988	3,983,062	4,676,282
1971	0	0	699,052	0	0	0	699,052	5,614,013	6,185,714
1972	420,789	1,820,832	697,576	0	0	0	697,576	12,353,356	12,998,869
1973	621,431	2,248,000	641,626	0	0	0	641,626	14,590,688	15,194,233
1974	723,949	2,223,720	669,279	0	0	0	669,279	16,598,762	17,372,561
1975	841,991	3,140,708	806,429	0	0	0	806,429	19,569,999	20,517,423
1976	(650,944)	1,710,546	840,927	0	0	0	840,927	19,002,859	20,027,213
1977	634,581	2,923,325	872,169	0	0	0	872,169	23,267,885	24,213,489
1978	3,101,737	5,319,943	934,178	0	0	0	934,178	24,835,862	26,029,905
1979	957,825	3,899,350	871,767	0	0	0	871,767	23,422,610	24,676,331
1980	216,933	3,757,970	1,047,459	0	0	0	1,047,459	30,098,796	32,031,846
1981	1,094,117	5,930,781	1,031,344	0	0	0	1,031,344	33,806,231	35,434,893
1982	978,814	6,430,978	1,017,698	0	0	0	1,017,698	39,583,603	41,701,957
1983	3,124,113	8,234,273	1,147,436	0	0	0	1,147,436	53,994,828	56,252,427
1984	727,531	7,896,353	1,428,873	0	0	0	1,428,873	63,964,434	67,119,884
1985	1,775,928	10,598,452	1,857,591	0	0	0	1,857,591	70,887,141	74,463,533
1986	1,339,257	11,003,070	1,713,872	0	0	0	1,713,872	73,849,460	77,119,199
1987	1,405,233	9,254,882	1,685,324	0	0	0	1,685,324	70,300,382	74,051,000
1988	1,450,832	9,551,284	1,971,388	0	0	0	1,971,388	72,771,771	76,496,798
1989	1,501,289	10,966,935	1,774,313	0	0	0	1,774,313	74,043,790	78,811,216
1990	846,364	12,406,583	2,265,683	0	0	0	2,265,683	85,391,031	90,596,815
1991	1,191,280	10,277,542	2,182,068	0	0	0	2,182,068	86,540,789	90,633,416
1992	2,206,880	12,594,371	2,453,941	0	0	0	2,453,941	93,881,732	98,942,590
1993	1,148,691	12,545,154	2,830,903	0	0	0	2,830,903	100,508,492	107,811,327
1994	1,715,623	11,732,324	3,888,588	0	0	0	3,888,588	94,812,441	102,406,679
1995	82,171	12,037,310	3,465,572	0	0	0	3,465,572	100,620,079	107,375,390
1996	1,777,460	16,305,198	4,795,763	0	0	0	4,795,763	106,482,029	113,323,971
1997	1,682,511	16,198,950	3,070,260	9,989	0	0	3,080,249	110,409,119	116,566,352
1998	1,544,780	16,208,145	4,293,607	1,264,336	1,185	3,151	5,562,279	133,298,781	141,271,931
1999	1,711,665	15,381,868	4,321,651	971,711	1,825	4,853	5,300,040	124,882,951	132,921,276
2000	1,811,144	14,965,711	4,220,628	1,255,932	1,944	5,166	5,483,670	125,030,311	133,147,109
2001	(192,116)	13,293,273	4,323,720	1,273,167	1,640	4,359	5,602,886	119,966,131	128,282,319
2002	3,319,813	16,633,971	4,332,886	1,275,041	1,658	4,408	5,613,993	123,289,329	131,624,613
2003	1,595,098	14,963,139	4,333,359	1,275,174	1,690	4,494	5,614,717	124,392,125	132,727,735
2004	278,945	13,727,911	4,336,672	1,276,529	1,934	5,137	5,620,272	118,921,342	127,263,257
2005	2,192,320	15,519,119	4,331,628	1,274,466	1,565	4,158	5,611,817	123,619,735	131,952,053
2006	1,531,954	14,850,598	4,331,314	1,274,335	1,542	4,098	5,611,289	122,637,531	130,969,251
2007	1,877,132	15,217,285	4,332,114	1,274,660	1,600	4,252	5,612,626	122,184,821	130,518,053
2008	2,582,644	15,939,639	4,332,881	1,274,977	1,656	4,402	5,613,916	124,672,046	133,006,748
2009	981,122	14,311,364	4,331,800	1,274,535	1,577	4,193	5,612,105	120,027,176	128,359,823
2010	2,010,638	15,369,615	4,332,963	1,275,012	1,662	4,418	5,614,055	123,324,753	131,659,611
2011	1,890,840	15,250,977	4,333,015	1,275,033	1,666	4,429	5,614,143	122,571,741	130,906,703
2012	1,674,061	15,041,668	4,333,322	1,275,159	1,688	4,488	5,614,657	123,162,808	131,498,351
2013	2,146,994	15,551,273	4,334,821	1,275,772	1,797	4,779	5,617,169	122,713,271	131,051,667
2014	2,116,307	15,584,679	4,337,452	1,276,852	1,990	5,288	5,621,582	123,213,710	131,557,113
2015	1,674,790	15,147,385	4,337,627	1,276,920	2,002	5,324	5,621,873	124,177,102	132,520,842
2016	2,116,376	15,589,626	4,337,646	1,276,930	2,004	5,325	5,621,905	122,086,050	130,429,825
2017	2,052,253	15,530,742	4,337,858	1,277,016	2,019	5,368	5,622,261	124,407,736	132,751,916
2018	2,095,003	15,576,934	4,337,986	1,277,070	2,029	5,392	5,622,477	123,181,806	131,526,232
2019	1,998,197	15,480,247	4,337,990	1,277,071	2,029	5,392	5,622,482	122,977,318	131,321,750
2020	1,729,423	15,199,397	4,337,487	1,276,865	1,992	5,296	5,621,640	124,364,374	132,707,849
2021	1,892,969	15,360,739	4,337,392	1,276,825	1,985	5,276	5,621,478	122,155,000	130,498,294
2022	1,875,389	15,352,229	4,337,765	1,276,979	2,012	5,350	5,622,106	123,779,261	132,123,267
2023	1,967,051	15,442,232	4,337,694	1,276,948	2,008	5,335	5,621,985	124,355,872	132,699,745
2024	1,699,050	15,168,244	4,337,453	1,276,852	1,990	5,289	5,621,584	121,018,377	129,361,789
2025	1,848,619	15,324,914	4,337,740	1,276,970	2,011	5,345	5,622,066	125,917,013	134,260,974
2026	1,745,900	15,210,954	4,337,284	1,276,783	1,977	5,256	5,621,300	121,176,202	129,519,293
2027	1,869,384	15,337,665	4,337,414	1,276,834	1,986	5,281	5,621,515	123,553,075	131,896,410
2028	1,810,856	15,276,736	4,337,315	1,276,797	1,980	5,262	5,621,354	123,657,452	132,000,603
2029	1,975,893	15,440,531	4,337,262	1,276,773	1,976	5,252	5,621,263	123,721,289	132,064,338
2030	1,721,161	15,177,249	4,336,918	1,276,633	1,951	5,184	5,620,686	122,018,119	130,360,513
2031	1,845,410	15,307,501	4,337,160	1,276,729	1,969	5,233	5,621,091	124,746,822	133,089,675
2032	1,549,390	15,001,461	4,336,757	1,276,566	1,938	5,153	5,620,414	120,977,087	129,319,172
2033	2,050,418	15,512,843	4,337,171	1,276,734	1,970	5,234	5,621,109	125,168,321	133,511,192
2034	1,795,640	15,251,303	4,336,898	1,276,624	1,950	5,182	5,620,654	122,220,620	130,562,974
2035	838,086	14,296,504	4,337,028	1,276,678	1,958	5,207	5,620,871	123,555,613	131,898,214
Total	98,140,985	789,804,505	212,360,473	48,166,277	70,355	187,009	260,784,114	6,217,793,581	6,624,811,673

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	211,198	0	0
1971	0	0	10,609	10,609	381,662	574,015	225,188	138,001	17,664
1972	0	0	14,434	14,434	598,702	927,369	509,061	234,626	89,516
1973	0	0	14,449	14,449	493,490	685,014	379,305	303,105	275,021
1974	0	0	17,473	17,473	565,575	769,839	438,997	344,632	350,558
1975	0	0	14,779	14,779	349,758	1,330,133	514,735	542,726	585,744
1976	0	0	20,856	20,856	571,361	1,456,742	562,537	609,257	600,780
1977	0	0	22,635	22,635	512,996	801,033	211,120	166,598	173,208
1978	0	0	21,692	21,692	586,355	2,222,001	619,774	658,659	578,337
1979	0	0	16,237	16,237	605,136	3,439,968	977,001	760,555	724,534
1980	0	0	19,945	19,945	523,369	1,889,087	1,013,514	854,098	826,802
1981	0	0	23,841	23,841	567,692	3,920,954	1,909,144	1,289,727	1,269,451
1982	0	0	12,159	12,159	531,147	3,060,402	1,449,890	1,196,255	1,208,785
1983	0	0	2,335	2,335	124,295	873,617	375,730	362,477	337,756
1984	0	0	4,866	4,866	276,167	1,811,286	928,407	691,613	607,427
1985	0	0	10,186	10,186	452,499	3,222,921	1,624,191	1,401,979	1,401,513
1986	0	0	15,472	15,472	826,289	6,538,258	2,621,888	2,410,658	2,437,840
1987	0	0	27,222	27,222	896,420	6,190,415	2,530,384	2,240,852	2,222,877
1988	18,200	20,101	24,742	63,043	914,608	6,353,387	2,640,540	2,577,112	2,573,704
1989	27,896	46,451	9,080	83,427	1,083,150	9,591,339	4,008,636	3,985,289	3,993,969
1990	58,705	68,476	43,130	170,311	1,861,053	10,706,313	4,518,131	5,801,241	6,038,674
1991	11,125	10,117	5,875	27,117	378,980	1,926,358	493,809	904,473	1,031,968
1992	13,444	13,168	9,554	36,166	314,541	3,136,869	1,141,896	1,202,156	1,252,807
1993	(11,725)	(8,700)	(5,363)	(25,788)	(154,463)	641,000	393,173	(56,493)	(33,368)
1994	47,067	39,873	28,924	115,864	795,497	5,697,761	2,320,433	2,500,256	2,507,295
1995	19,637	20,232	11,570	51,439	246,033	3,818,113	1,430,734	781,058	698,723
1996	56,666	46,748	23,220	126,634	617,456	8,186,383	3,967,241	2,503,665	2,303,306
1997	61,932	50,303	19,684	131,919	905,352	7,893,689	2,720,603	2,468,011	2,309,132
1998	101,631	71,759	73,038	246,428	1,023,652	11,258,614	4,365,482	4,201,267	4,610,260
1999	147,046	106,987	108,133	362,166	2,623,627	17,723,496	7,016,943	7,766,057	8,708,350
2000	161,038	114,932	121,966	397,936	2,863,998	19,509,607	7,788,590	8,836,287	9,967,349
2001	124,773	93,407	106,681	324,861	2,355,696	16,178,777	6,268,367	7,044,362	7,920,000
2002	127,949	95,363	112,116	335,428	2,379,346	16,085,986	6,222,492	6,924,280	7,768,773
2003	161,622	110,710	118,324	390,656	2,509,106	17,773,322	6,962,937	8,147,802	9,261,758
2004	189,249	130,412	141,018	460,679	2,871,495	19,854,926	7,861,698	9,135,146	10,368,486
2005	155,016	105,351	118,447	378,814	2,319,686	16,933,983	6,595,472	7,824,415	8,918,347
2006	154,222	103,789	119,987	377,998	2,285,298	16,817,860	6,541,072	7,802,398	8,900,736
2007	162,444	107,714	129,656	399,814	2,371,737	17,592,947	6,875,503	8,269,680	9,447,409
2008	170,375	111,577	138,734	420,686	2,456,779	18,402,947	7,220,982	8,741,941	10,000,372
2009	164,212	106,208	136,419	406,839	2,338,556	17,423,251	6,797,666	8,187,102	9,355,584
2010	175,200	111,986	148,653	435,839	2,465,801	18,791,807	7,382,712	9,015,272	10,331,351
2011	178,225	112,251	154,658	445,134	2,471,614	18,985,247	7,463,242	9,148,895	10,492,719
2012	182,755	113,771	161,703	458,229	2,505,081	19,400,243	7,641,012	9,408,371	10,800,181
2013	197,509	121,220	178,464	497,193	2,669,104	20,751,816	8,223,571	10,171,489	11,686,715
2014	221,827	134,295	204,882	561,004	2,957,001	23,037,018	9,212,731	11,449,768	13,168,185
2015	226,341	135,169	213,319	574,829	2,976,253	23,338,070	9,341,013	11,646,580	13,403,029
2016	229,237	135,262	220,241	584,740	2,978,295	23,393,678	9,365,374	11,686,065	13,450,619
2017	233,667	136,313	228,893	598,873	3,001,439	23,845,315	9,557,415	11,989,604	13,814,596
2018	237,509	136,958	237,361	611,828	3,015,637	24,055,692	9,648,855	12,127,927	13,979,498
2019	240,232	136,972	244,923	622,127	3,015,956	24,210,470	9,713,802	12,243,276	14,119,991
2020	238,529	134,469	248,029	621,027	2,960,835	23,978,066	9,610,032	12,151,079	14,022,452
2021	238,175	134,001	248,375	620,551	2,950,517	23,883,407	9,568,253	12,095,193	13,957,016
2022	241,467	135,853	251,809	629,129	2,991,306	24,259,953	9,733,248	12,319,216	14,219,261
2023	240,848	135,504	251,163	627,515	2,983,632	24,229,240	9,719,502	12,306,840	14,206,233
2024	238,720	134,308	248,944	621,972	2,957,278	23,849,612	9,555,340	12,060,276	13,912,650
2025	241,257	135,735	251,591	628,583	2,988,715	24,283,080	9,742,025	12,339,391	14,244,682
2026	237,220	133,464	247,381	618,065	2,938,707	23,715,015	9,496,179	11,985,878	13,826,908
2027	238,360	134,105	248,568	621,033	2,952,815	23,988,938	9,614,558	12,172,164	14,050,339
2028	237,510	133,627	247,682	618,819	2,942,290	23,898,184	9,575,763	12,120,809	13,990,579
2029	237,027	133,355	247,179	617,561	2,936,302	23,867,711	9,562,073	12,106,148	13,974,265
2030	233,986	131,643	244,007	609,636	2,898,628	23,508,204	9,406,057	11,892,107	13,723,331
2031	236,127	132,850	246,241	615,218	2,925,163	23,807,664	9,535,832	12,078,183	13,943,241
2032	232,559	130,840	242,518	605,917	2,880,951	23,262,893	9,299,669	11,732,840	13,533,845
2033	236,209	132,895	246,326	615,430	2,926,177	23,799,578	9,533,014	12,070,638	13,933,638
2034	233,810	131,544	243,823	609,177	2,896,449	23,474,473	9,391,147	11,869,427	13,696,211
2035	234,957	132,190	245,020	612,167	2,910,658	23,540,438	9,421,215	11,898,931	13,728,408
Total	8,041,787	4,975,558	7,845,016	20,862,361	121,038,454	905,482,261	361,906,470	431,839,690	489,821,390

a) Includes extra peaking costs assigned directly to contractors. Refer to Appendix B text discussion of Table B-17 under "Project Water Charges."
b) Costs for the period 1968 through 1987 are for an interim facility.
c) The relatively minor costs of Del Valle Pumping Plant have been combined with those of South Bay Pumping Plant to simplify the allocation procedures.

Table B-12

Variable OMP&R Costs to Be Reimbursed through Variable OMP&R Component of Transportation Charge (a

(Dollars)

Calendar Year	California Aqueduct (continued)								
	Reach 16A	Reach 17E	Reach 18A	Reach 22B	Reach 23	Reach 24	Reach 26A	Reach 28J	Reach 29A
	Chrisman Pumping Plant (10)	Edmonston Pumping Plant (11)	Alamo Powerplant (12)	Pearblossom Pumping Plant (13)	Mojave Siphon Powerplant (14)	Silverwood Lake (d (15)	Devil Canyon Powerplant (16)	Lake Perris (d (17)	Oso Pumping Plant (18)
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	165,589	494,616	0	23,387	0	4,216	(3,024)	0	93,212
1973	434,834	1,524,488	0	219,421	0	47,861	(436,769)	0	158,063
1974	589,117	2,058,680	0	315,705	0	98,179	(496,517)	52,549	189,479
1975	1,130,256	3,940,915	0	577,509	0	25,950	(1,033,054)	65,938	349,000
1976	1,222,413	4,235,934	0	869,201	0	122,336	(1,459,978)	104,257	245,397
1977	351,987	1,160,085	0	296,678	0	261,704	(1,115,096)	50,523	18,075
1978	1,046,051	3,657,440	0	1,560,069	0	0	(3,038,194)	0	69,043
1979	1,451,641	4,989,568	0	1,720,373	0	123,354	(3,159,826)	358,199	118,995
1980	1,646,515	5,439,082	0	1,742,930	0	155,370	(3,318,152)	0	36,761
1981	2,726,625	8,975,564	0	2,152,072	0	290,518	(3,678,813)	372,857	443,282
1982	2,416,093	8,325,450	0	1,489,997	0	0	(2,734,735)	0	539,246
1983	610,175	1,812,417	0	346,500	0	381,004	(5,478,332)	0	135,164
1984	1,135,193	3,457,125	0	627,129	0	0	(7,326,090)	(10,024)	237,006
1985	2,790,888	9,290,049	0	1,195,775	0	0	(10,477,628)	(56,410)	874,071
1986	5,011,938	16,998,282	(1,013,756)	2,364,991	0	0	(11,484,996)	0	1,271,720
1987	4,454,718	14,679,501	(1,025,916)	1,830,673	0	136,286	(10,814,602)	55,504	1,323,470
1988	5,154,544	16,916,764	(742,800)	2,381,301	0	38,104	(14,495,967)	0	1,427,584
1989	8,412,038	28,235,510	(766,953)	4,128,448	0	667,880	(18,532,961)	90,677	2,021,036
1990	13,673,672	48,525,119	(834,989)	6,509,146	0	71,150	(20,911,839)	147,351	2,876,983
1991	2,427,686	8,646,392	(269,665)	996,386	0	0	(4,884,015)	0	535,369
1992	2,507,838	8,380,661	(929,667)	1,166,220	0	188,995	(9,485,416)	(68,171)	655,216
1993	(373,122)	(1,800,643)	(56,410)	(238,565)	0	(40,120)	(7,502,549)	0	90,334
1994	5,255,899	18,229,609	(58,666)	2,558,480	0	0	(11,662,318)	145,724	1,201,580
1995	1,360,955	4,460,833	(1,324,810)	1,103,957	0	0	(9,742,248)	0	122,138
1996	4,917,806	17,239,168	(2,965,278)	2,785,578	(992,438)	0	(12,174,720)	0	888,548
1997	5,183,973	18,554,696	(2,572,502)	2,954,811	(1,747,733)	0	(13,831,793)	0	840,034
1998	9,681,204	33,879,066	(3,504,236)	5,638,749	(4,499,710)	0	(19,103,250)	0	1,648,577
1999	18,423,883	64,840,556	(5,022,685)	12,084,099	(6,932,377)	0	(29,535,569)	0	2,711,524
2000	21,106,921	74,343,883	(5,536,983)	13,991,575	(7,445,881)	0	(31,885,179)	0	3,080,503
2001	16,763,892	59,028,464	(5,341,817)	11,798,684	(6,351,823)	589,853	(31,029,305)	0	2,110,922
2002	16,433,548	57,843,556	(4,835,102)	10,797,842	(5,911,597)	970,415	(28,423,653)	0	2,310,349
2003	19,651,044	69,298,800	(4,536,460)	10,139,658	(5,223,987)	0	(26,145,103)	14,742	4,006,605
2004	21,988,758	77,520,804	(4,430,725)	11,263,701	(5,031,530)	1,973,770	(25,954,545)	780,203	4,482,576
2005	18,938,299	66,819,282	(4,758,571)	9,729,989	(5,520,263)	0	(26,741,628)	0	3,869,018
2006	18,905,949	66,715,682	(4,790,799)	9,718,134	(5,649,251)	0	(26,910,498)	96,472	3,851,262
2007	20,075,988	70,863,736	(4,899,202)	10,262,350	(5,582,708)	731,999	(27,630,323)	0	4,108,128
2008	21,259,999	75,061,789	(5,042,050)	10,944,538	(5,725,906)	0	(28,005,292)	0	4,314,289
2009	19,882,572	70,184,409	(4,940,960)	10,190,003	(5,497,322)	1,325,661	(27,918,174)	436,428	4,022,906
2010	21,975,518	77,613,463	(5,196,845)	11,285,097	(6,097,750)	0	(28,405,136)	152,539	4,448,255
2011	22,324,323	78,856,788	(5,256,349)	11,433,963	(5,876,071)	603,086	(29,014,034)	0	4,517,966
2012	22,984,827	81,203,771	(5,357,955)	11,801,299	(6,146,632)	0	(29,013,219)	227,582	4,627,992
2013	24,878,599	87,908,733	(5,374,667)	12,745,518	(6,133,446)	573,988	(29,554,122)	0	5,006,826
2014	28,040,553	99,099,502	(5,537,887)	14,392,840	(6,428,961)	198,926	(29,738,906)	96,158	5,617,732
2015	28,546,251	100,898,443	(5,664,083)	14,697,311	(6,441,130)	0	(30,134,686)	0	5,705,252
2016	28,648,977	101,264,518	(5,561,584)	14,568,610	(6,220,707)	1,215,753	(30,346,004)	271,931	5,800,826
2017	29,433,798	104,058,627	(5,737,886)	15,120,011	(6,685,806)	0	(30,751,990)	0	5,917,800
2018	29,788,638	105,320,691	(5,688,993)	15,247,366	(6,633,592)	542,316	(31,088,381)	0	6,018,019
2019	30,093,164	106,407,939	(5,772,201)	15,399,310	(6,671,055)	389,860	(31,346,301)	93,646	6,090,875
2020	29,890,787	105,704,615	(5,851,590)	15,356,803	(6,541,771)	0	(31,598,488)	0	6,036,772
2021	29,750,837	105,208,143	(5,747,942)	15,134,627	(6,377,652)	748,262	(31,498,377)	420,198	6,067,160
2022	30,312,283	107,198,935	(5,801,213)	15,509,243	(6,652,822)	0	(31,502,168)	311,011	6,150,996
2023	30,285,290	107,105,287	(5,885,933)	15,525,361	(6,551,651)	0	(31,689,667)	112,928	6,135,267
2024	29,653,541	104,858,662	(5,734,771)	15,032,039	(6,200,935)	2,248,994	(31,827,530)	0	6,063,213
2025	30,367,644	107,397,514	(5,847,134)	15,585,617	(6,516,738)	0	(31,793,919)	0	6,145,667
2026	29,470,873	104,212,768	(5,705,194)	14,924,066	(6,136,228)	1,529,816	(31,521,712)	489,116	6,032,119
2027	29,952,547	105,927,587	(5,826,824)	15,342,991	(6,542,432)	327,594	(31,764,893)	0	6,071,918
2028	29,824,872	105,475,470	(5,863,633)	15,269,329	(6,776,195)	0	(31,482,119)	269,684	6,048,622
2029	29,790,463	105,354,852	(5,895,736)	15,263,289	(6,710,846)	0	(31,570,216)	182,833	6,037,915
2030	29,253,082	103,449,086	(5,842,798)	14,930,423	(6,552,209)	1,048,116	(31,715,385)	22,504	5,947,011
2031	29,725,061	105,125,078	(5,854,857)	15,257,673	(6,620,369)	0	(31,748,403)	0	6,015,036
2032	28,845,477	101,999,615	(5,737,393)	14,648,212	(6,398,639)	1,595,339	(31,507,029)	355,884	5,886,354
2033	29,704,149	105,050,093	(5,900,157)	15,228,691	(6,584,212)	0	(31,670,362)	123,096	6,017,085
2034	29,194,704	103,241,390	(5,815,068)	14,852,631	(6,369,980)	1,475,932	(31,805,224)	0	5,953,100
2035	29,262,085	103,476,904	(5,874,587)	15,183,052	(6,788,407)	0	(31,670,343)	0	5,846,508
Total	1,040,815,722	3,668,245,806	(218,534,282)	547,972,866	(239,768,762)	20,662,467	(1,324,320,765)	5,765,929	207,483,751

d) These values represent a proportionate allocation of the total variable OMP&R costs of pumping and recovery plants (Table B-3) associated with net annual withdrawals from storage for Project Transportation Facilities. The allocation is determined annually by applying the following ratio, calculated from the data shown in Table B-6: "Reservoir Storage Changes" (withdrawals, as a positive value) conveyed through each plant, divided by "Total" annual quantity conveyed through each plant, in acre-feet. The costs so determined are accumulated for all upstream plants for each year, for each respective reservoir.

Table B-12

Variable OMP&R Costs to Be Reimbursed through Variable OMP&R Component of Transportation Charge (a

(Dollars)

Calendar Year	California Aqueduct (continued)							
	Reach 29G	Reach 29H	Reach 29J	Reach 30	Reach 31A	Reach 33A		
	Warne Powerplant (19)	Pyramid Lake (d (20)	Castaic Powerplant (21)	Castaic Lake (d (22)	Las Perillas& Badger Hill Pumping Plants (23)	Devil's Den, Bluestone & Polonio Pumping Plants (24)	Total (25)	Grand Total (26)
1962	0	0	0	0	0	0	0	36,970
1963	0	0	0	0	0	0	0	57,711
1964	0	0	0	0	0	0	0	74,134
1965	0	0	0	0	0	0	0	142,609
1966	0	0	0	0	0	0	0	192,605
1967	0	0	0	0	0	0	13,881	236,998
1968	0	0	0	118,676	0	0	774,253	1,117,913
1969	0	0	0	78,350	0	0	507,516	773,646
1970	0	0	0	136,429	0	0	693,842	1,103,798
1971	0	0	0	166,296	0	0	1,121,164	1,513,435
1972	3,578	(193,058)	72,639	237,638	24,700	0	2,684,065	3,297,201
1973	0	7,344	(1,057,564)	0	126,929	0	2,667,052	3,174,991
1974	0	42,364	(1,540,853)	5,561	125,722	0	3,344,012	3,927,060
1975	0	0	(2,445,397)	10,225	101,245	0	5,695,925	6,060,462
1976	0	60,068	(1,940,099)	1,056,464	143,241	0	7,888,550	8,480,767
1977	0	0	(607,380)	(1,211,050)	71,311	0	628,796	1,164,427
1978	0	1,069,035	(1,542,479)	0	183,605	0	7,083,341	7,691,388
1979	0	0	(2,384,748)	(10,611)	195,432	0	9,304,435	9,925,808
1980	0	458,630	(984,154)	19,978	168,458	0	9,948,919	10,492,233
1981	0	0	(3,201,635)	0	169,178	0	16,638,924	17,230,457
1982	(783,626)	0	(3,463,971)	0	168,390	0	12,872,176	13,415,482
1983	(843,635)	68,779	(4,369,425)	(1,588,849)	18,031	0	(6,958,591)	(6,831,961)
1984	(1,991,601)	0	(1,799,546)	(1,647,629)	120,931	0	(3,158,773)	(2,877,740)
1985	(5,930,176)	0	(16,350,536)	0	148,350	0	(10,865,013)	(10,402,328)
1986	(5,579,301)	0	(11,072,448)	0	298,277	0	10,803,351	11,645,112
1987	(6,292,822)	81,630	(11,557,616)	(41,828)	246,243	0	6,259,769	7,183,411
1988	(7,003,483)	43,312	(12,295,001)	(206,759)	217,424	0	5,579,766	6,557,417
1989	(8,238,763)	8,859	(14,515,993)	131,399	285,525	0	23,505,935	24,672,512
1990	(11,095,239)	324,955	(20,471,397)	24,409	416,504	0	46,320,184	48,351,548
1991	(3,604,790)	432,501	(6,579,194)	0	3,609	0	2,060,887	2,466,984
1992	(4,927,650)	31,155	(8,950,593)	(1,069,900)	63,423	0	(5,704,161)	(5,353,454)
1993	(3,700,155)	(668,777)	(8,306,381)	(2,825,586)	(48,651)	0	(24,526,313)	(24,706,564)
1994	(5,835,213)	0	(10,565,857)	(103,880)	205,534	0	12,396,637	13,307,998
1995	(861,231)	580,135	(3,608,979)	0	114,674	0	(1,065,948)	(768,476)
1996	(4,251,241)	0	(8,459,336)	0	293,018	0	14,241,700	14,985,790
1997	(4,810,595)	0	(8,742,937)	0	276,395	194,742	11,690,526	12,727,797
1998	(7,140,692)	56,247	(12,508,182)	9,321	429,108	715,933	29,737,758	31,007,838
1999	(8,462,295)	0	(14,742,869)	0	734,305	1,769,183	77,082,601	80,068,394
2000	(8,948,263)	0	(15,563,749)	0	775,241	1,885,248	91,905,149	95,167,083
2001	(7,805,554)	0	(12,162,579)	1,935,239	645,908	1,590,711	69,184,101	71,864,658
2002	(8,466,719)	0	(13,178,939)	0	653,255	1,608,738	66,803,224	69,517,998
2003	(14,181,685)	0	(22,345,647)	144,717	762,689	2,325,048	76,056,240	78,956,002
2004	(13,907,094)	0	(21,825,339)	1,549,606	872,843	2,660,851	99,164,135	102,496,309
2005	(14,667,908)	0	(23,305,245)	0	691,931	2,149,521	67,476,642	70,175,142
2006	(14,897,771)	0	(23,549,928)	169,371	664,059	2,117,655	66,502,403	69,165,699
2007	(15,250,851)	0	(24,203,304)	0	669,185	2,197,754	73,528,291	76,299,842
2008	(15,491,375)	0	(24,546,141)	0	693,180	2,276,558	80,105,831	82,983,296
2009	(15,237,525)	0	(24,056,168)	747,517	659,823	2,167,006	73,729,779	76,475,174
2010	(15,919,479)	0	(25,203,892)	0	695,726	2,284,918	83,153,556	86,055,196
2011	(16,154,761)	0	(25,538,604)	0	697,366	2,290,304	84,974,080	87,890,828
2012	(16,326,180)	0	(25,803,593)	66,943	706,807	2,321,315	88,542,764	91,506,074
2013	(16,564,917)	0	(26,197,721)	0	753,087	2,473,306	101,348,775	104,515,072
2014	(16,802,750)	0	(26,532,014)	0	834,316	2,740,083	122,847,294	126,365,299
2015	(16,967,713)	0	(26,767,882)	150,138	839,749	2,757,924	125,348,266	128,899,348
2016	(17,203,035)	0	(27,188,497)	0	840,325	2,759,817	126,746,666	130,309,701
2017	(17,400,632)	0	(27,516,632)	0	846,855	2,781,263	129,272,338	132,872,650
2018	(17,560,263)	0	(27,841,233)	0	850,862	2,794,417	131,561,819	135,189,284
2019	(17,762,011)	0	(28,169,500)	0	850,951	2,794,713	132,686,929	136,325,012
2020	(17,889,515)	0	(28,427,105)	101,401	835,399	2,743,636	130,122,573	133,704,435
2021	(18,023,264)	0	(28,666,742)	0	832,488	2,734,077	130,085,684	133,656,752
2022	(18,028,512)	0	(28,667,500)	0	843,995	2,771,871	132,977,797	136,598,232
2023	(18,018,603)	0	(28,666,731)	0	841,831	2,764,761	132,419,955	136,031,102
2024	(17,986,784)	0	(28,586,214)	131,420	834,395	2,740,340	130,604,248	134,183,498
2025	(18,022,583)	0	(28,666,925)	0	843,266	2,769,472	132,871,059	136,488,357
2026	(18,007,048)	0	(28,618,611)	78,827	829,155	2,723,133	129,325,060	132,881,832
2027	(18,024,167)	0	(28,666,486)	0	833,136	2,736,206	130,193,176	133,767,024
2028	(18,028,037)	0	(28,660,522)	11,752	830,167	2,726,453	129,231,178	132,792,287
2029	(18,014,984)	0	(28,666,242)	0	828,477	2,720,904	128,830,906	132,384,769
2030	(18,002,269)	0	(28,605,557)	97,130	817,847	2,685,993	126,062,673	129,570,937
2031	(18,026,505)	0	(28,667,409)	0	825,334	2,710,582	128,106,141	131,646,522
2032	(17,942,971)	0	(28,490,184)	270,660	812,859	2,669,615	124,837,046	128,323,914
2033	(18,005,872)	0	(28,665,150)	0	825,621	2,711,522	128,171,372	131,712,979
2034	(18,022,761)	0	(28,653,279)	20,944	817,232	2,683,974	126,004,853	129,510,479
2035	(17,692,283)	0	(28,021,738)	1,003,885	821,241	2,697,141	126,832,450	130,355,275
Total	(676,601,574)	2,403,179	(1,122,884,933)	(231,796)	33,577,512	93,246,688	4,226,881,619	4,368,782,434

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)					Planning and Pre-operating Costs (a (f (6)	Total (7)
				Application of Oroville Power Revenues to:			
	Capital Costs (a (1)	Capital Cost Credits (b (2)	Operating Costs (c (3)	Capital Costs (d (4)	Operating Costs (e (5)		
1952	171,322	0	0	0	0	0	171,322
1953	312,190	0	0	0	0	0	312,190
1954	308,624	0	0	0	0	0	308,624
1955	194,645	0	0	0	0	0	194,645
1956	1,357,077	0	0	0	0	0	1,357,077
1957	6,210,709	0	0	0	0	0	6,210,709
1958	9,510,916	0	0	0	0	0	9,510,916
1959	11,390,586	0	0	0	0	0	11,390,586
1960	14,456,356	(4,850,000)	0	0	0	0	9,606,356
1961	18,682,616	(431,527)	0	0	0	0	18,251,089
1962	9,012,960	(479,280)	0	0	0	0	8,533,680
1963	72,965,728	(478,743)	(14,000)	0	0	0	72,472,985
1964	62,490,522	(751,330)	(14,000)	0	0	107,780	61,832,972
1965	70,913,845	(763,541)	(14,000)	0	0	551,850	70,688,154
1966	125,205,400	(748,649)	(14,000)	0	0	1,081,023	125,523,774
1967	94,296,914	(812,145)	(13,446)	0	0	1,189,212	94,660,535
1968	39,888,442	(431,574)	1,303,821	(951,000)	0	793,399	40,603,088
1969	5,279,786	(259,015)	2,890,772	(11,007,000)	0	601,867	(2,493,590)
1970	4,130,490	(203,733)	4,818,634	(14,650,000)	(1,500,000)	516,659	(6,887,950)
1971	3,877,493	(193,631)	6,026,480	(14,650,000)	(1,500,000)	408,754	(6,030,904)
1972	4,569,024	(196,361)	5,393,011	(14,650,000)	(1,500,000)	287,374	(6,096,952)
1973	3,985,414	(136,997)	6,135,774	(14,650,000)	(1,500,000)	203,384	(5,962,425)
1974	6,660,000	(137,503)	6,944,723	(17,950,000)	(1,500,000)	201,907	(5,780,873)
1975	8,084,450	(234,567)	7,697,390	(14,650,000)	(1,500,000)	146,188	(456,539)
1976	5,870,531	(204,944)	7,067,037	(14,650,000)	(1,500,000)	205,234	(3,212,142)
1977	21,285,849	(150,214)	10,547,977	(14,650,000)	(1,500,000)	857,419	16,391,031
1978	7,713,252	(64,566)	12,854,280	(14,650,000)	(1,500,000)	2,131,286	6,484,252
1979	9,030,801	0	9,546,518	(14,650,000)	(1,500,000)	2,131,884	4,559,203
1980	10,372,763	0	13,296,330	(14,650,000)	(1,500,000)	3,638,851	11,157,944
1981	11,194,479	0	10,386,660	(14,650,000)	(1,500,000)	4,597,474	10,028,613
1982	16,634,428	0	16,264,070	(14,650,000)	(1,500,000)	4,594,682	21,343,180
1983	12,037,206	0	22,265,159	(34,705,000)	(8,735,000)	3,751,993	(5,385,642)
1984	8,786,271	0	22,969,291	(14,650,000)	(10,348,000)	2,979,126	9,736,688
1985	12,027,235	0	23,964,069	(14,650,000)	(8,079,000)	2,069,024	15,331,328
1986	20,464,281	0	26,508,134	(14,650,000)	(9,107,000)	1,602,419	24,817,834
1987	30,814,266	0	22,699,540	(14,650,000)	(9,451,000)	1,762,179	31,174,985
1988	33,627,367	0	25,468,739	(14,650,000)	(8,677,000)	1,808,899	37,578,005
1989	10,408,634	0	27,780,904	(14,650,000)	(8,104,000)	2,677,673	18,113,211
1990	27,809,154	0	36,336,021	(14,650,000)	(8,497,000)	1,436,397	42,434,572
1991	35,932,903	0	75,416,339	(14,650,000)	(9,487,000)	1,727,284	88,939,526
1992	27,655,865	0	31,450,410	(14,650,000)	(8,526,000)	1,718,739	37,649,014
1993	21,155,446	0	35,345,333	(14,650,000)	(8,768,000)	1,707,311	34,790,090
1994	13,787,685	0	38,482,259	(14,650,000)	(7,484,000)	2,133,641	32,269,585
1995	14,250,803	0	43,601,786	(14,650,000)	(7,041,000)	2,040,939	38,202,528
1996	10,535,446	0	52,856,890	(14,650,000)	(7,288,000)	2,440,491	43,894,827
1997	14,029,534	0	53,007,704	(14,650,000)	(7,009,000)	1,664,732	47,042,970
1998	10,430,298	0	59,835,281	(14,650,000)	(8,155,000)	4,180,000	51,640,579
1999	9,408,754	0	58,509,001	(14,650,000)	(10,698,000)	4,679,000	47,248,755
2000	25,847,339	0	60,872,506	(14,650,000)	(9,743,000)	4,397,000	66,723,845
2001	24,363,549	0	57,382,089	(14,650,000)	(8,609,000)	3,930,000	62,416,638
2002	11,307,603	0	58,807,272	(14,650,000)	(8,609,000)	3,430,000	50,285,875
2003	8,192,827	0	58,363,573	(14,650,000)	(8,609,000)	3,180,000	46,477,400
2004	683,264	0	56,898,206	(14,650,000)	(8,609,000)	3,130,000	37,452,470
2005	399,464	0	58,483,163	(14,650,000)	(8,609,000)	3,130,000	38,753,627
2006	399,464	0	50,381,765	(14,650,000)	(8,609,000)	3,130,000	30,652,229
2007	399,464	0	53,136,290	(14,650,000)	(8,609,000)	3,130,000	33,406,754
2008	399,464	0	55,564,347	(14,650,000)	(8,609,000)	3,130,000	35,834,811
2009	399,464	0	49,139,530	(14,650,000)	(8,609,000)	3,130,000	29,409,994
2010	399,464	0	53,342,611	(14,650,000)	(8,609,000)	3,130,000	33,613,075
2011	399,464	0	50,071,193	(14,650,000)	(8,609,000)	0	27,211,657
2012	399,464	0	51,340,877	(14,650,000)	(8,609,000)	0	28,481,341
2013	399,464	0	50,898,393	(14,650,000)	(8,609,000)	0	28,038,857
2014	399,464	0	51,593,603	(14,650,000)	(8,609,000)	0	28,734,067
2015	399,464	0	51,101,754	(14,650,000)	(8,609,000)	0	28,242,218
2016	399,464	0	52,525,919	(14,650,000)	(8,609,000)	0	29,666,383
2017	399,464	0	50,281,277	(14,650,000)	(8,609,000)	0	27,421,741
2018	399,464	0	53,246,645	(14,650,000)	(8,609,000)	0	30,387,109
2019	399,464	0	51,781,250	(14,650,000)	(8,609,000)	0	28,921,714
2020	399,464	0	50,222,468	(14,650,000)	(8,609,000)	0	27,362,932
2021	399,464	0	50,128,978	(14,650,000)	(8,609,000)	0	27,269,442
2022	399,464	0	53,531,570	(14,650,000)	(8,609,000)	0	30,672,034
2023	399,464	0	51,916,254	(14,650,000)	(8,609,000)	0	29,056,718
2024	399,464	0	50,489,025	(14,650,000)	(8,609,000)	0	27,629,489
2025	399,464	0	50,984,430	(14,650,000)	(8,609,000)	0	28,124,894
2026	399,464	0	49,549,935	(14,650,000)	(8,609,000)	0	26,690,399
2027	399,464	0	52,072,071	(14,650,000)	(8,609,000)	0	29,212,535
2028	399,464	0	53,380,590	(14,650,000)	(8,609,000)	0	30,521,054
2029	399,464	0	51,910,863	(14,650,000)	(8,609,000)	0	29,051,327
2030	399,464	0	51,030,599	(14,650,000)	(8,609,000)	0	28,171,063
2031	399,464	0	52,212,040	(14,650,000)	(8,609,000)	0	29,352,504
2032	399,464	0	47,766,380	(14,650,000)	(8,609,000)	0	24,906,844
2033	399,464	0	51,947,029	(14,650,000)	(8,609,000)	0	29,087,493
2034	399,464	0	49,047,493	(14,650,000)	(8,609,000)	0	26,187,957
2035	399,464	0	51,672,436	(14,650,000)	(8,609,000)	0	28,812,900
Total	1,051,996,726	(11,528,320)	2,670,675,315	(1,002,213,000)	(476,012,000)	101,473,074	2,334,391,795

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 (1997) 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 WA (a (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1952	0	0	0	83	114	410	607	121	224	345
1953	0	0	0	324	479	1,808	2,611	336	619	955
1954	0	0	0	819	1,305	5,150	7,274	422	779	1,201
1955	0	0	0	976	1,570	6,297	8,843	211	388	599
1956	0	0	0	8,844	14,459	63,816	87,119	227	419	646
1957	15,199	11,435	26,634	21,563	35,239	649,598	706,400	290	535	825
1958	33,420	16,591	50,011	67,764	71,717	733,415	872,896	721	1,330	2,051
1959	20,697	6,591	27,288	154,254	143,731	493,049	791,034	25,853	53,921	79,774
1960	9,097	8,830	17,927	296,491	275,611	1,018,661	1,590,763	37,106	77,941	115,047
1961	6,950	7,445	14,395	853,505	802,675	1,914,710	3,570,890	15,637	31,208	46,845
1962	(195)	(925)	(1,120)	545,123	615,142	1,686,043	2,846,308	19,638	37,213	56,851
1963	1,320	1,110	2,430	657,426	1,281,271	3,243,840	5,182,537	73,104	136,563	209,667
1964	38,392	35,467	73,859	712,651	1,747,784	7,251,802	9,712,237	146,712	273,914	420,626
1965	198,833	62,221	261,054	360,780	606,027	3,414,461	4,381,268	261,453	486,421	747,874
1966	461,619	49,917	511,536	592,716	592,600	2,245,221	3,430,537	598,316	1,107,149	1,705,465
1967	1,569,498	40,379	1,609,877	796,996	803,953	2,401,869	4,002,818	947,505	1,751,623	2,699,128
1968	859,613	61,691	921,304	736,472	696,075	1,997,928	3,430,475	359,887	666,471	1,026,358
1969	74,389	59,317	133,706	269,699	293,275	764,954	1,327,928	84,314	157,237	241,551
1970	43,362	67,876	111,238	58,677	61,200	135,570	255,447	54,662	102,455	157,117
1971	26,764	34,051	60,815	12,086	18,227	84,089	114,402	37,649	71,703	109,352
1972	19,643	18,905	38,548	12,291	12,762	63,612	88,665	24,098	45,422	69,520
1973	56,510	30,874	87,384	10,494	12,137	39,380	62,011	27,479	51,710	79,189
1974	165,830	65,832	231,662	15,721	24,402	73,121	113,244	30,087	56,331	86,418
1975	91,825	89,233	181,058	16,730	15,807	41,395	73,932	25,396	50,761	76,157
1976	57,766	83,650	141,416	34,004	34,663	109,611	178,278	54,576	109,504	164,080
1977	64,167	80,147	144,314	46,229	45,116	133,375	224,720	130,014	243,030	373,044
1978	69,319	81,717	151,036	71,234	66,009	174,898	312,141	43,226	82,011	125,237
1979	191,272	282,908	474,180	45,469	42,943	110,667	199,079	51,322	97,291	148,613
1980	264,433	386,006	650,439	134,523	124,353	304,617	563,493	200,001	371,050	571,051
1981	227,606	383,086	610,692	(33,738)	(29,856)	(65,638)	(129,232)	(52,132)	(93,629)	(145,761)
1982	549,164	870,611	1,419,775	7,875	8,322	27,066	43,263	(17,917)	(31,964)	(49,881)
1983	1,254,900	1,433,061	2,687,961	138,413	131,516	339,246	609,175	51,355	96,195	147,550
1984	2,547,878	2,750,040	5,297,918	152,992	140,972	351,921	645,885	51,515	96,823	148,338
1985	7,143,121	6,443,613	13,586,734	19,777	19,245	53,491	92,513	34,362	67,122	101,484
1986	10,565,937	16,926,630	27,492,567	32,033	31,581	88,068	151,682	114,423	241,327	355,750
1987	7,979,817	12,599,440	20,579,257	50,153	48,675	138,960	237,788	461,509	1,012,018	1,473,527
1988	2,318,534	4,348,631	6,667,165	129,671	124,625	331,878	586,174	537,478	1,164,307	1,701,785
1989	1,225,756	1,601,433	2,827,189	111,342	105,565	266,682	483,589	438,389	942,934	1,381,323
1990	442,954	894,304	1,337,258	217,682	218,058	609,141	1,044,881	563,882	1,206,586	1,770,468
1991	99,915	100,937	200,852	413,611	383,539	946,665	1,743,815	797,465	1,685,284	2,482,749
1992	57,429	75,828	133,257	182,569	170,360	443,365	796,294	1,269,848	2,628,304	3,898,152
1993	122,423	118,951	241,374	129,344	125,312	342,417	597,073	4,240,141	8,446,414	12,686,555
1994	71,273	121,916	193,189	46,042	58,051	229,650	333,743	17,190,584	34,209,443	51,400,027
1995	30,605	45,647	76,252	97,809	97,063	257,487	452,359	41,826,016	84,980,469	126,806,485
1996	20,108	55,195	75,303	49,631	47,890	127,348	224,869	31,123,236	72,205,848	103,329,084
1997	72,619	100,961	173,580	80,054	76,455	202,125	358,634	9,479,906	21,520,813	31,000,719
1998	343	814	1,157	30,171	27,585	65,733	123,489	2,609,261	4,813,788	7,423,049
1999	306	727	1,033	27,014	24,698	58,855	110,567	69,583	128,373	197,956
2000	245	581	826	23,258	21,264	50,672	95,194	33,852	62,453	96,305
2001	245	581	826	5,876	5,371	12,801	24,048	802	1,480	2,282
2002	158	376	534	3,803	3,477	8,286	15,566	519	958	1,477
2003	72	171	243	1,731	1,583	3,770	7,084	236	436	672
2004	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0
							0			0
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	39,071,131	50,454,802	89,525,933	8,451,057	10,281,997	34,053,356	52,786,410	114,074,676	241,451,005	355,525,681

a) Costs from Table B-10 allocated to Solano County Water Agency are reduced herein by $2,102,700 in 1986 and $1,823,500 in 1987 under provisions of Amendment No. 10 to its water supply contract

Table B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area									
				Kern County Water Agency						
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (b (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Municipal and Industrial (c (15)	Agricultural (16)	County of Kings (17)	Oak Flat Water District (18)	Tulare Lake Basin Water Storage District (19)	Total (20)
1952	389	19	59	933	120	9,066	19	13	784	11,402
1953	1,076	53	161	2,878	344	27,210	56	33	2,158	33,969
1954	1,350	67	200	3,368	416	32,148	70	42	2,719	40,380
1955	676	36	100	1,495	198	14,610	36	22	1,371	18,544
1956	727	33	107	2,692	272	24,128	34	26	1,417	29,436
1957	932	38	139	6,019	495	49,757	38	30	1,707	59,155
1958	2,308	100	345	14,302	1,154	118,604	103	61	4,367	141,344
1959	7,386	363	2,517	26,121	2,597	249,937	372	381	14,758	304,432
1960	12,941	629	3,666	33,966	4,155	346,832	644	498	25,697	429,028
1961	21,849	1,063	3,957	51,297	6,500	533,548	1,087	599	43,378	663,278
1962	49,322	2,410	7,866	94,832	13,836	1,008,153	2,466	1,879	98,144	1,278,908
1963	208,765	10,686	32,174	363,806	55,715	3,899,002	10,933	5,990	425,347	5,012,418
1964	328,298	16,962	64,892	599,611	88,904	6,552,885	17,349	11,943	672,037	8,352,881
1965	538,235	27,482	117,999	1,097,431	152,931	11,840,881	28,116	21,803	1,095,168	14,920,046
1966	1,107,799	52,588	279,177	2,216,303	339,222	24,485,374	53,792	38,893	2,173,173	30,746,321
1967	852,570	39,539	445,563	2,008,950	286,990	22,925,427	40,445	34,777	1,653,493	28,287,754
1968	198,747	9,740	166,266	1,098,485	70,088	11,229,008	9,962	12,238	396,089	13,190,623
1969	94,440	4,794	35,473	612,751	27,216	6,329,029	4,902	7,302	191,582	7,307,489
1970	54,346	2,720	21,686	411,909	15,521	4,088,402	2,784	3,999	109,473	4,710,840
1971	25,462	1,290	12,094	189,276	7,112	1,594,698	1,321	540	51,620	1,883,413
1972	11,590	589	8,355	82,341	3,409	706,358	601	343	23,526	837,112
1973	6,657	336	10,202	39,731	1,976	438,786	341	220	13,449	511,968
1974	9,478	469	11,044	45,168	2,767	463,185	478	326	18,982	551,897
1975	13,328	678	5,245	36,344	3,710	373,939	692	426	27,049	461,411
1976	17,508	837	12,617	52,909	5,621	631,881	856	1,152	34,457	757,838
1977	9,671	437	47,790	36,340	3,753	799,129	445	494	18,496	916,555
1978	23,499	(30,407)	6,178	54,091	6,579	565,856	1,208	1,402	47,449	675,855
1979	25,051	1,295	5,665	53,752	6,609	551,534	1,324	1,862	51,295	698,387
1980	144,986	(4,617)	31,163	321,118	38,126	3,167,135	7,682	7,144	297,227	4,009,964
1981	(5,425)	(15,463)	201	(44,299)	(1,220)	(382,418)	(297)	1,752	(11,324)	(458,493)
1982	49,917	2,584	6,600	83,241	13,142	650,194	2,638	1,252	102,292	911,860
1983	52,430	(35,296)	12,123	110,246	13,872	1,056,717	2,769	1,327	107,342	1,321,530
1984	86,351	4,475	14,302	155,191	22,775	1,604,723	4,571	2,678	177,030	2,072,096
1985	25,437	1,311	5,649	47,003	6,765	477,031	1,342	1,176	52,016	617,730
1986	38,313	(41,067)	9,864	71,626	10,321	782,437	2,008	777	78,145	952,424
1987	28,770	1,476	7,004	55,467	7,968	607,045	1,509	1,491	58,681	769,411
1988	67,662	3,627	20,477	104,529	16,049	1,223,726	3,708	5,408	141,183	1,586,369
1989	159,533	8,198	28,312	358,901	43,839	3,871,701	8,383	12,310	325,657	4,816,834
1990	290,500	15,045	49,746	548,659	86,662	5,982,540	15,387	22,696	595,420	7,606,655
1991	349,611	18,113	60,463	580,816	91,815	6,380,119	18,524	23,497	716,696	8,239,654
1992	126,069	6,447	28,075	241,703	34,612	2,677,674	6,593	10,891	256,727	3,388,791
1993	86,117	4,376	30,246	174,365	23,840	2,011,912	4,474	4,699	174,778	2,514,807
1994	66,007	3,387	24,080	126,360	17,959	1,472,836	3,462	2,174	134,653	1,850,918
1995	82,969	(1,000)	72,698	167,476	24,388	2,346,923	4,355	2,824	169,322	2,869,955
1996	29,451	(61,858)	62,520	74,541	9,773	1,287,924	1,490	1,585	59,022	1,464,448
1997	150,385	7,741	56,456	263,985	40,217	3,173,544	7,912	3,699	307,312	4,011,251
1998	204,526	(44,073)	31,719	345,365	54,823	3,761,519	10,849	3,570	419,744	4,788,042
1999	223,280	11,594	33,250	364,846	58,263	4,006,236	11,844	4,140	458,236	5,171,689
2000	108,591	5,638	16,176	176,625	28,336	1,943,562	5,761	3,673	222,856	2,511,218
2001	2,570	133	383	4,484	670	45,011	136	251	5,274	58,912
2002	1,663	86	248	2,903	434	29,135	88	163	3,414	38,134
2003	757	39	113	1,321	197	13,260	40	74	1,554	17,355
2004	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	5,994,870	35,742	1,903,405	13,573,573	1,751,836	148,079,853	305,702	266,545	12,052,442	183,963,968

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 $54,693 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	3,144	1,040	849	252	1,400	72	2,099	417	6,068	1,546
1953	9,983	3,309	2,661	797	4,386	221	6,597	1,323	19,026	4,842
1954	12,691	4,171	3,454	1,030	5,697	286	8,506	1,685	24,567	6,278
1955	5,387	1,868	1,373	398	2,259	115	3,515	712	9,209	2,369
1956	9,716	3,565	2,187	611	3,604	191	5,939	1,261	13,087	3,426
1957	26,145	9,193	6,314	1,810	10,414	539	16,376	3,432	40,520	10,503
1958	48,913	17,484	11,527	3,279	19,015	986	30,332	6,378	72,477	18,834
1959	69,887	29,598	15,805	4,601	26,062	1,340	45,064	8,984	98,302	25,439
1960	84,176	38,611	22,001	6,778	36,282	1,540	59,689	10,723	146,866	37,385
1961	125,932	54,019	34,505	12,505	56,903	2,238	86,677	16,359	235,671	57,573
1962	198,008	85,135	43,622	13,836	71,939	3,339	117,686	24,873	252,990	64,208
1963	578,839	254,739	116,563	33,090	192,241	9,806	350,254	73,093	609,234	160,334
1964	1,090,859	500,472	208,832	55,284	344,407	18,381	666,645	137,327	1,023,241	275,337
1965	1,901,195	944,803	384,297	103,443	633,782	32,701	1,226,458	243,724	1,907,554	511,334
1966	3,946,291	2,145,429	810,140	215,219	1,336,077	69,089	2,634,991	515,510	3,932,308	1,059,311
1967	4,950,588	4,090,262	1,072,748	294,884	1,769,173	87,865	3,652,097	649,992	5,800,748	1,544,477
1968	5,887,665	3,984,376	1,344,106	366,475	2,216,692	106,734	3,804,242	779,320	7,953,131	2,114,773
1969	5,781,730	3,063,210	1,682,863	537,978	2,775,429	120,617	4,125,761	860,308	10,865,095	2,760,548
1970	4,997,610	3,263,784	2,044,403	693,730	3,371,719	105,791	4,595,370	732,337	13,767,251	3,449,255
1971	2,558,149	2,139,292	1,068,025	337,697	1,761,411	48,013	2,478,069	344,624	8,121,409	1,982,821
1972	966,164	280,379	330,444	91,744	544,970	19,011	823,084	133,448	2,685,256	696,344
1973	351,613	913,196	158,075	82,097	260,721	6,257	311,334	45,752	1,758,307	402,963
1974	448,012	279,501	258,553	73,955	426,407	8,086	605,226	58,712	1,614,610	425,163
1975	251,679	245,795	193,316	52,737	318,813	4,925	436,998	33,773	1,532,243	407,524
1976	236,127	254,679	136,498	37,169	225,108	4,223	331,600	30,824	961,139	255,588
1977	198,636	371,107	91,220	25,816	150,438	3,742	291,844	26,720	590,709	155,333
1978	300,624	469,672	78,312	22,166	129,148	5,208	201,122	38,466	427,873	111,458
1979	357,025	938,378	81,690	21,764	134,718	5,951	210,329	44,326	403,043	108,265
1980	1,857,441	1,772,711	421,950	112,741	695,875	32,265	1,160,630	239,632	2,033,229	546,014
1981	(153,506)	612,460	(46,087)	(8,446)	(76,002)	(2,487)	(175,070)	(18,933)	(136,479)	(41,524)
1982	1,565,122	860,286	300,368	79,971	495,363	26,355	711,655	197,575	1,440,318	393,449
1983	2,074,940	519,515	398,835	117,629	657,754	34,902	926,576	261,500	2,160,847	591,146
1984	1,523,415	295,590	300,011	86,299	494,782	27,358	684,364	189,195	1,567,843	429,226
1985	901,816	158,415	222,662	63,995	367,215	13,364	485,802	108,563	1,148,095	313,803
1986	898,480	104,533	243,605	63,843	401,748	10,662	542,985	103,775	1,167,007	318,664
1987	345,342	105,387	197,122	51,930	325,092	5,976	433,452	43,360	959,342	261,141
1988	427,322	243,152	128,681	38,912	212,227	6,771	340,146	49,967	793,039	212,875
1989	1,091,481	447,763	358,622	106,576	591,434	18,252	912,917	133,703	1,911,823	516,594
1990	646,640	367,009	366,064	107,489	603,712	7,429	909,976	66,935	1,958,746	530,996
1991	837,259	402,343	404,211	132,885	666,624	12,179	992,678	93,761	2,449,336	667,364
1992	634,000	357,508	289,617	142,660	477,633	9,584	635,795	76,918	2,449,703	670,020
1993	632,706	331,365	232,514	188,751	383,467	10,170	466,256	73,780	4,425,093	1,203,219
1994	468,432	166,089	135,987	99,000	224,273	7,270	298,784	53,340	2,634,924	715,207
1995	458,467	292,657	134,037	81,588	221,053	7,409	411,286	54,353	2,082,583	564,388
1996	286,550	216,518	97,775	20,143	161,252	4,666	357,521	34,165	2,780,384	743,335
1997	446,507	260,510	124,671	53,136	205,606	7,513	388,133	55,333	2,479,800	667,393
1998	481,187	319,555	204,548	61,231	337,340	8,193	523,546	61,282	1,844,249	495,210
1999	460,904	581,218	235,204	66,138	387,895	7,782	586,642	58,233	1,276,347	345,785
2000	216,195	116,052	104,904	26,793	173,007	3,655	267,057	27,352	521,697	142,314
2001	13,433	5,501	2,430	615	4,008	225	7,679	1,687	10,868	2,984
2002	8,695	3,560	1,573	398	2,595	146	4,970	1,092	7,035	1,932
2003	3,958	1,621	716	181	1,180	66	2,262	497	3,201	879
2004	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	51,523,574	32,928,385	15,064,403	4,785,603	24,844,348	926,972	39,003,946	6,791,468	102,840,964	26,945,645

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	961	68,843	369	87,060	0	0	0	0	59	99,473
1953	3,005	217,026	1,182	274,358	0	0	0	0	263	312,156
1954	3,895	279,193	1,484	352,937	0	0	0	0	767	402,559
1955	1,470	111,243	667	140,585	0	0	0	0	969	169,540
1956	2,116	178,456	1,290	225,449	0	0	0	0	9,173	351,823
1957	6,505	513,664	3,345	648,760	0	0	0	0	23,173	1,464,947
1958	11,660	941,349	6,351	1,188,585	0	0	2	2	32,888	2,287,777
1959	15,767	1,358,858	9,841	1,709,548	0	0	14	14	57,919	2,970,009
1960	23,256	1,908,941	12,745	2,388,993	0	0	28	28	123,202	4,664,988
1961	36,073	3,202,969	18,681	3,940,105	0	0	10	10	316,221	8,551,744
1962	39,937	3,535,265	28,989	4,479,827	0	0	32	32	228,201	8,889,007
1963	99,088	11,166,496	86,618	13,730,395	0	0	51	51	528,495	24,665,993
1964	169,532	18,013,021	164,197	22,667,535	0	0	7,791	7,791	590,035	41,824,964
1965	315,149	33,660,703	306,470	42,171,613	0	0	3,139	3,139	332,680	62,817,674
1966	652,289	74,275,506	679,853	92,272,013	0	0	(48)	(48)	783,728	129,449,552
1967	954,878	130,211,311	1,275,287	156,354,310	0	0	47	47	1,479,421	194,433,355
1968	1,309,835	146,951,814	1,355,310	178,174,473	0	0	51,573	51,573	1,254,193	198,048,999
1969	1,721,312	139,483,723	1,079,044	174,857,618	0	0	234,232	234,232	398,182	184,500,706
1970	2,155,304	161,454,273	1,142,447	201,773,274	0	0	16,227	16,227	74,028	207,098,171
1971	1,234,937	133,613,766	735,996	156,424,209	0	0	27,204	27,204	12,456	158,631,851
1972	433,516	43,823,112	65,817	50,893,289	0	0	9	9	13,183	51,940,326
1973	256,329	39,681,170	289,610	44,517,424	0	0	25	25	8,098	45,265,829
1974	263,879	18,845,134	85,860	23,393,098	0	0	45	45	28,569	24,404,933
1975	253,601	16,706,622	83,719	20,521,745	0	0	21	21	8,224	21,322,548
1976	158,659	13,524,351	84,418	16,240,383	0	0	51	51	16,485	17,498,531
1977	96,392	11,755,636	110,699	13,868,292	0	0	28	28	21,182	15,548,135
1978	68,960	15,763,795	174,684	17,791,488	0	0	38	38	28,876	19,084,671
1979	66,756	27,609,493	343,132	30,324,870	0	0	23	23	26,668	31,871,820
1980	336,540	59,330,278	639,895	69,179,201	0	0	26	26	59,168	75,033,342
1981	(25,107)	15,745,455	224,871	15,899,145	0	0	34	34	(6,747)	15,769,638
1982	241,980	30,930,983	315,502	37,558,927	0	0	11	11	16,086	39,900,041
1983	363,632	25,191,768	186,447	33,485,491	0	0	19	19	72,225	38,323,951
1984	263,903	16,425,805	103,090	22,390,881	0	0	26	26	83,253	30,638,397
1985	192,952	10,399,337	56,014	14,432,033	0	0	29	29	16,338	28,846,861
1986	196,017	8,988,681	34,654	13,074,654	0	0	31	31	16,250	42,043,358
1987	160,772	7,885,810	36,055	10,810,781	0	0	32	32	29,063	33,899,859
1988	131,555	10,344,836	81,572	13,011,055	0	0	55	55	55,112	23,607,715
1989	318,163	21,707,834	157,910	28,273,072	0	0	44	44	44,449	37,826,500
1990	326,901	19,626,391	122,915	25,641,203	0	0	63	63	93,618	37,494,146
1991	410,475	23,291,857	132,687	30,493,659	0	0	54	54	149,998	43,310,781
1992	411,547	23,106,125	117,169	29,378,279	0	0	42	42	81,399	37,676,214
1993	744,270	32,514,889	105,425	41,311,905	0	0	30	30	59,325	57,411,069
1994	443,383	17,921,156	51,087	23,218,932	0	0	14	14	34,207	77,031,030
1995	349,707	16,722,893	71,991	21,452,412	0	0	3	3	42,393	151,699,859
1996	467,278	18,600,585	47,316	23,817,488	0	0	0	0	21,173	128,932,365
1997	416,768	18,847,912	72,933	24,026,215	0	0	1	1	33,838	59,604,238
1998	307,478	18,507,676	109,909	23,261,404	0	0	0	0	10,540	35,607,681
1999	212,846	22,400,289	206,085	26,825,368	0	0	0	0	9,542	32,316,155
2000	87,620	5,871,616	38,482	7,596,744	0	0	0	0	8,224	10,308,511
2001	1,832	200,964	1,962	254,188	0	0	0	0	1,988	342,244
2002	1,186	130,082	1,270	164,534	0	0	0	0	1,287	221,532
2003	540	59,202	578	74,881	0	0	0	0	586	100,821
2004	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	16,717,299	1,473,608,157	11,063,924	1,807,044,688	0	0	341,056	341,056	7,330,653	2,496,518,389

e) Costs from Table B-10 allocated to MWDSC are reduced herein by $16,425,374 in 1972 under provisions of Amendment No. 7 to its water contract.

Table B-15

Capital Cost Component of Transportation Charge for Each Contractor a) b)

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County WA (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	105,102	105,763	366,228	577,093	0	0	0
1964	0	0	0	123,579	171,070	531,568	826,217	6,059	20,500	26,559
1965	0	0	0	156,097	260,156	901,195	1,317,448	11,426	31,741	43,167
1966	18,080	0	18,080	172,559	291,045	1,075,232	1,538,836	20,183	49,661	69,844
1967	41,609	0	41,609	199,604	321,250	1,189,671	1,710,525	37,976	84,159	122,135
1968	121,607	0	121,607	235,970	362,228	1,312,095	1,910,293	51,724	111,313	163,037
1969	165,422	0	165,422	269,575	397,707	1,413,931	2,081,213	55,046	118,838	173,884
1970	169,213	0	169,213	281,881	412,655	1,452,921	2,147,457	56,687	123,018	179,705
1971	171,423	0	171,423	284,559	415,775	1,459,831	2,160,165	57,679	125,911	183,590
1972	172,788	0	172,788	331,837	416,704	1,464,117	2,212,658	58,253	128,392	186,645
1973	173,789	31,399	205,188	332,464	417,354	1,467,359	2,217,177	58,529	129,648	188,177
1974	176,669	32,973	209,642	332,999	417,973	1,469,366	2,220,338	58,720	130,699	189,419
1975	185,122	36,328	221,450	333,800	419,217	1,473,093	2,226,110	58,969	131,932	190,901
1976	189,802	40,877	230,679	334,653	420,022	1,475,203	2,229,878	165,716	330,613	496,329
1977	192,746	45,140	237,886	336,386	421,789	1,480,790	2,238,965	167,430	337,261	504,691
1978	196,017	49,225	245,242	338,742	424,089	1,487,588	2,250,419	172,951	350,753	523,704
1979	199,550	53,391	252,941	342,373	427,453	1,496,503	2,266,329	174,043	356,045	530,088
1980	209,299	67,811	277,110	344,691	429,642	1,502,143	2,276,476	175,212	362,450	537,662
1981	222,778	87,485	310,263	351,547	435,980	1,517,670	2,305,197	180,500	386,269	566,769
1982	234,379	107,012	341,391	349,828	434,459	1,514,324	2,298,611	179,739	379,600	559,339
1983	262,370	151,387	413,757	350,229	434,883	1,515,704	2,300,816	179,972	376,824	556,796
1984	326,333	224,431	550,764	357,284	441,586	1,532,995	2,331,865	181,639	382,678	564,317
1985	456,199	364,602	820,801	365,082	448,771	1,550,933	2,364,786	183,472	388,406	571,878
1986	820,288	693,036	1,513,324	366,090	449,752	1,553,659	2,369,501	184,386	392,664	577,050
1987	1,361,763	1,560,480	2,922,243	367,732	451,371	1,558,172	2,377,275	186,674	408,607	595,281
1988	1,773,044	2,209,856	3,982,900	370,316	453,879	1,565,334	2,389,529	193,242	477,985	671,227
1989	1,893,260	2,435,333	4,328,593	377,040	460,341	1,582,542	2,419,923	201,962	557,503	759,465
1990	1,957,218	2,518,894	4,476,112	382,849	465,849	1,596,457	2,445,155	210,057	621,483	831,540
1991	1,980,485	2,565,868	4,546,353	394,283	477,303	1,628,453	2,500,039	220,247	686,463	906,710
1992	1,985,770	2,571,207	4,556,977	416,161	497,590	1,678,526	2,592,277	234,256	780,856	1,015,112
1993	1,988,830	2,575,248	4,564,078	425,890	506,668	1,702,152	2,634,710	251,333	933,951	1,185,284
1994	1,995,405	2,581,636	4,577,041	432,836	513,398	1,720,540	2,666,774	313,888	1,529,339	1,843,227
1995	1,999,264	2,588,237	4,587,501	435,329	516,541	1,732,975	2,684,845	554,248	3,910,712	4,464,960
1996	2,000,935	2,590,730	4,591,665	440,671	521,842	1,747,037	2,709,550	1,304,406	12,036,110	13,340,516
1997	2,002,044	2,593,772	4,595,816	443,406	524,481	1,754,056	2,721,943	2,138,065	21,930,735	24,068,800
1998	2,006,085	2,599,391	4,605,476	447,862	528,737	1,765,308	2,741,907	2,415,903	24,875,788	27,291,691
1999	2,006,104	2,599,436	4,605,540	449,559	530,288	1,769,003	2,748,850	2,421,551	24,916,312	27,337,863
2000	2,006,122	2,599,478	4,605,600	451,094	531,692	1,772,348	2,755,134	2,425,827	24,929,025	27,354,852
2001	2,006,136	2,599,511	4,605,647	452,431	532,914	1,775,261	2,760,606	2,427,772	24,932,615	27,360,387
2002	2,006,150	2,599,545	4,605,695	452,772	533,227	1,776,005	2,762,004	2,427,819	24,932,701	27,360,520
2003	2,006,159	2,599,567	4,605,726	452,997	533,431	1,776,493	2,762,921	2,427,850	24,932,758	27,360,608
2004	2,006,164	2,599,577	4,605,741	453,100	533,526	1,776,719	2,763,345	2,427,850	24,932,758	27,360,608
2005	2,006,164	2,599,577	4,605,741	453,100	533,526	1,776,719	2,763,345	2,427,850	24,932,758	27,360,608
2006	2,006,164	2,599,577	4,605,741	453,100	533,526	1,776,719	2,763,345	2,427,850	24,932,758	27,360,608
2007	2,006,164	2,599,577	4,605,741	453,100	533,526	1,776,719	2,763,345	2,427,850	24,932,758	27,360,608
2008	2,006,164	2,599,577	4,605,741	453,100	533,526	1,776,719	2,763,345	2,427,850	24,932,758	27,360,608
2009	2,006,164	2,599,577	4,605,741	453,100	533,526	1,776,719	2,763,345	2,427,850	24,932,758	27,360,608
2010	2,006,164	2,599,577	4,605,741	453,100	533,526	1,776,719	2,763,345	2,427,850	24,932,758	27,360,608
2011	2,006,164	2,599,577	4,605,741	453,100	533,526	1,776,719	2,763,345	2,427,850	24,932,758	27,360,608
2012	2,006,164	2,599,577	4,605,741	453,100	533,526	1,776,719	2,763,345	2,427,850	24,932,758	27,360,608
2013	2,006,164	2,599,577	4,605,741	342,055	427,763	1,410,491	2,180,309	2,427,850	24,932,758	27,360,608
2014	2,006,164	2,599,577	4,605,741	306,749	362,456	1,245,151	1,914,356	2,421,791	24,912,258	27,334,049
2015	2,006,164	2,599,577	4,605,741	268,774	273,370	875,523	1,417,667	2,416,424	24,901,016	27,317,440
2016	1,988,084	2,599,577	4,587,661	249,691	242,481	701,487	1,193,659	2,407,667	24,883,097	27,290,764
2017	1,964,555	2,599,577	4,564,132	218,558	212,276	587,047	1,017,881	2,389,873	24,848,598	27,238,471
2018	1,884,557	2,599,577	4,484,134	176,972	171,298	464,622	812,892	2,376,126	24,821,445	27,197,571
2019	1,840,742	2,599,577	4,440,319	138,785	135,819	362,787	637,391	2,372,804	24,813,919	27,186,723
2020	1,836,950	2,599,577	4,436,527	124,885	120,870	323,797	569,552	2,371,163	24,809,740	27,180,903
2021	1,834,740	2,599,577	4,434,317	121,878	117,751	316,887	556,516	2,370,171	24,806,846	27,177,017
2022	1,833,376	2,599,577	4,432,953	121,262	116,822	312,601	550,685	2,369,597	24,804,365	27,173,962
2023	1,832,375	2,568,178	4,400,553	120,636	116,171	309,358	546,165	2,369,320	24,803,110	27,172,430
2024	1,829,494	2,566,604	4,396,098	120,101	115,553	307,351	543,005	2,369,130	24,802,058	27,171,188
2025	1,821,042	2,563,249	4,384,291	119,299	114,309	303,624	537,232	2,368,881	24,800,825	27,169,706
2026	1,816,362	2,558,701	4,375,063	118,447	113,503	301,514	533,464	2,262,134	24,602,145	26,864,279
2027	1,813,417	2,554,437	4,367,854	116,713	111,736	295,927	524,376	2,260,420	24,595,497	26,855,917
2028	1,810,147	2,550,352	4,360,499	114,357	109,437	289,129	512,923	2,254,899	24,582,004	26,836,903
2029	1,806,613	2,546,187	4,352,800	110,726	106,072	280,214	497,012	2,253,807	24,576,713	26,830,520
2030	1,796,864	2,531,767	4,328,631	108,409	103,883	274,574	486,866	2,252,638	24,570,307	26,822,945
2031	1,783,386	2,512,092	4,295,478	101,552	97,545	259,047	458,144	2,247,350	24,546,489	26,793,839
2032	1,771,785	2,492,566	4,264,351	103,272	99,067	262,393	464,732	2,248,111	24,553,157	26,801,268
2033	1,743,793	2,448,190	4,191,983	102,870	98,643	261,013	462,526	2,247,877	24,555,934	26,803,811
2034	1,679,831	2,375,146	4,054,977	95,815	91,939	243,722	431,476	2,246,211	24,550,080	26,796,291
2035	1,549,964	2,234,976	3,784,940	88,017	84,754	225,784	398,555	2,244,378	24,544,352	26,788,730
Total	97,992,302	126,267,694	224,259,996	21,757,882	26,102,127	87,309,295	135,169,304	98,230,683	991,633,853	1,089,864,536

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	Southern California Area									
				Kern County Water Agency						
	Antelope Valley-East Kern Water Agency (21)	Castaic Lake Water Agency (22)	Coachella Valley Water District (23)	Crestline-Lake Arrowhead Water Agency (24)	Desert Water Agency (25)	Littlerock Creek Irrigation District (26)	Mojave Water Agency (27)	Palmdale Water District (28)	San Bernardino Valley Municipal Water District (29)	San Gabriel Valley Municipal Water District (30)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,350	0	0	0	0	0	0	0	51,775	0
1964	62,920	27,471	14,440	4,374	37,191	1,144	28,462	8,212	82,882	35,018
1965	118,700	53,051	25,116	7,200	40,804	2,084	50,360	15,235	135,181	35,373
1966	215,956	101,346	44,767	12,489	73,212	3,757	90,473	27,701	232,692	61,514
1967	417,814	210,983	86,188	23,491	141,524	7,291	175,317	54,067	433,698	115,666
1968	671,471	419,989	141,105	38,582	232,093	11,791	286,547	87,363	730,432	194,682
1969	973,444	623,817	209,953	57,347	345,637	17,263	426,104	127,321	1,137,320	302,890
1970	1,270,230	780,776	296,106	84,863	487,724	23,446	592,090	171,434	1,692,806	444,060
1971	1,526,762	947,846	400,636	120,305	660,119	28,868	789,467	208,987	2,395,985	620,270
1972	1,658,139	1,057,278	455,252	137,563	750,193	31,332	895,853	226,677	2,810,734	721,555
1973	1,707,755	1,071,715	472,162	142,256	778,081	32,307	929,930	233,525	2,947,902	757,130
1974	1,725,820	1,118,318	480,245	146,447	791,412	32,629	942,065	235,875	3,037,639	777,701
1975	1,748,830	1,132,634	493,455	150,225	813,199	33,044	968,491	238,890	3,120,078	799,410
1976	1,761,748	1,145,198	503,324	152,917	829,476	33,296	988,477	240,623	3,198,250	820,202
1977	1,773,856	1,158,207	510,294	154,815	840,971	33,512	1,002,637	242,203	3,247,298	833,245
1978	1,784,027	1,177,141	514,952	156,133	848,653	33,704	1,011,996	243,571	3,277,444	841,173
1979	1,799,425	1,201,111	518,958	157,266	855,258	33,971	1,020,039	245,541	3,299,314	846,871
1980	1,817,701	1,248,971	523,135	158,379	862,148	34,275	1,028,565	247,810	3,319,921	852,407
1981	1,912,966	1,339,561	544,749	164,152	897,794	35,930	1,072,638	260,098	3,424,033	880,368
1982	1,904,948	1,370,701	542,365	163,713	893,862	35,800	1,067,436	259,109	3,416,919	878,208
1983	1,984,934	1,414,634	557,713	167,799	919,174	37,147	1,098,928	269,206	3,490,504	898,310
1984	2,090,932	1,441,208	578,085	173,805	952,771	38,930	1,140,231	282,564	3,600,835	928,493
1985	2,168,674	1,456,311	593,393	178,208	978,017	40,326	1,171,392	292,219	3,680,824	950,392
1986	2,214,691	1,464,405	604,752	181,472	996,750	41,008	1,194,486	297,760	3,739,384	966,398
1987	2,260,784	1,469,781	617,244	184,746	1,017,353	41,555	1,220,179	303,084	3,799,229	982,739
1988	2,278,614	1,475,225	627,410	187,424	1,034,117	41,863	1,241,038	305,322	3,848,698	996,206
1989	2,300,868	1,487,871	634,100	189,446	1,045,150	42,216	1,254,453	307,925	3,889,896	1,007,265
1990	2,358,115	1,511,352	652,865	195,021	1,076,098	43,174	1,292,258	314,939	3,989,890	1,034,285
1991	2,392,155	1,530,659	672,106	200,670	1,107,831	43,565	1,331,178	318,464	4,092,836	1,062,193
1992	2,436,504	1,551,965	693,498	207,702	1,143,110	44,210	1,373,917	323,431	4,222,443	1,097,507
1993	2,470,367	1,571,047	708,945	215,307	1,168,585	44,722	1,402,425	327,540	4,353,045	1,133,228
1994	2,504,444	1,588,881	721,449	225,448	1,189,208	45,270	1,421,834	331,514	4,590,764	1,197,866
1995	2,529,869	1,597,899	728,824	230,812	1,201,370	45,665	1,433,855	334,410	4,733,482	1,236,604
1996	2,554,994	1,613,916	736,159	235,272	1,213,468	46,071	1,446,588	337,389	4,847,402	1,267,448
1997	2,570,877	1,625,885	741,565	236,386	1,222,382	46,330	1,457,932	339,284	5,020,736	1,308,437
1998	2,583,134	1,635,396	746,231	238,767	1,230,075	46,536	1,933,617	340,781	5,198,965	1,342,783
1999	2,610,186	1,653,362	757,731	242,210	1,249,041	46,997	1,963,050	344,226	6,105,522	1,370,624
2000	2,636,379	1,686,392	771,097	245,968	1,271,084	47,439	1,996,388	347,536	6,939,668	1,390,274
2001	2,648,806	1,693,062	777,127	247,508	1,281,029	47,649	2,011,739	349,108	6,969,655	1,398,454
2002	2,649,587	1,693,382	777,268	247,544	1,281,262	47,662	2,012,186	349,206	6,970,287	1,398,628
2003	2,650,099	1,693,592	777,361	247,568	1,281,415	47,671	2,012,478	349,270	6,970,702	1,398,742
2004	2,650,336	1,693,689	777,404	247,578	1,281,485	47,675	2,012,613	349,300	6,970,893	1,398,794
2005	2,650,336	1,693,689	777,404	247,578	1,281,485	47,675	2,012,613	349,300	6,970,893	1,398,794
2006	2,650,336	1,693,689	777,404	247,578	1,281,485	47,675	2,012,613	349,300	6,970,893	1,398,794
2007	2,650,336	1,693,689	777,404	247,578	1,281,485	47,675	2,012,613	349,300	6,970,893	1,398,794
2008	2,650,336	1,693,689	777,404	247,578	1,281,485	47,675	2,012,613	349,300	6,970,893	1,398,794
2009	2,650,336	1,693,689	777,404	247,578	1,281,485	47,675	2,012,613	349,300	6,970,893	1,398,794
2010	2,650,336	1,693,689	777,404	247,578	1,281,485	47,675	2,012,613	349,300	6,970,893	1,398,794
2011	2,650,336	1,693,689	777,404	247,578	1,281,485	47,675	2,012,613	349,300	6,970,893	1,398,794
2012	2,650,336	1,693,689	777,404	247,578	1,281,485	47,675	2,012,613	349,300	6,970,893	1,398,794
2013	2,617,129	1,693,689	777,404	247,578	1,268,150	47,675	2,012,613	349,300	6,919,233	1,385,713
2014	2,587,625	1,666,304	763,003	243,214	1,258,352	46,534	1,972,358	341,115	6,888,180	1,377,541
2015	2,532,024	1,640,794	752,359	240,396	1,240,797	45,597	1,938,379	334,115	6,836,025	1,363,507
2016	2,435,119	1,592,637	732,771	235,124	1,208,493	43,930	1,875,865	321,692	6,738,796	1,337,444
2017	2,233,975	1,483,284	691,478	224,154	1,140,393	40,409	1,741,559	295,417	6,538,365	1,283,450
2018	1,981,641	1,274,801	636,799	209,124	1,050,217	35,930	1,555,410	262,286	6,242,698	1,204,728
2019	1,681,544	1,071,716	568,290	190,444	937,231	30,490	1,361,506	222,564	5,837,323	1,096,937
2020	1,386,846	915,583	482,513	163,023	795,766	24,342	1,151,214	178,714	5,283,524	956,230
2021	1,132,116	749,226	378,309	127,663	623,908	18,950	916,986	141,386	4,581,801	780,420
2022	1,001,726	640,185	323,871	110,451	534,128	16,503	790,677	123,820	4,167,849	679,355
2023	952,480	625,894	307,028	105,775	506,351	15,534	748,724	117,019	4,030,980	643,862
2024	934,558	579,348	298,971	101,590	493,062	15,215	732,856	114,687	3,941,359	623,323
2025	911,723	565,102	285,793	97,821	471,328	14,803	702,007	111,694	3,859,061	601,652
2026	898,895	552,574	275,939	95,133	455,078	14,552	679,733	109,973	3,780,962	580,880
2027	886,859	539,593	268,982	93,238	443,604	14,336	662,831	108,401	3,731,972	567,853
2028	876,735	520,677	264,332	91,922	435,936	14,146	647,956	107,040	3,701,864	559,935
2029	861,412	496,738	260,341	90,792	429,353	13,880	637,704	105,079	3,680,055	554,254
2030	843,214	448,908	256,177	89,683	422,487	13,577	626,984	102,820	3,659,512	548,736
2031	748,539	358,552	234,670	83,937	387,018	11,932	567,826	90,605	3,555,877	520,906
2032	756,364	327,335	237,019	84,367	390,891	12,059	576,749	91,570	3,562,833	523,022
2033	676,589	283,486	221,709	80,291	365,643	10,716	540,476	81,500	3,489,420	502,968
2034	570,828	257,006	201,380	74,295	332,116	8,937	493,248	68,171	3,379,280	472,837
2035	493,179	241,939	186,089	69,897	306,897	7,542	458,366	58,528	3,299,367	450,959
Total	129,635,019	82,810,911	37,653,988	11,889,714	62,069,205	2,338,114	86,282,643	17,120,616	313,491,443	66,390,277

Table B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area					
	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)	South Bay Area Future Contractor (39)	Grand Total (40)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	691,434	0	776,559	0	0	0	0	43,160	1,396,812
1964	21,755	1,261,586	9,385	1,594,840	0	0	0	0	70,097	2,520,440
1965	21,884	2,182,391	17,781	2,705,160	0	0	405	405	100,172	4,246,017
1966	37,995	3,903,336	33,453	4,838,691	0	0	565	565	117,128	6,732,635
1967	71,340	7,699,872	68,210	9,505,461	0	0	563	563	157,075	11,831,474
1968	120,190	14,356,584	133,405	17,424,234	0	0	565	565	232,482	20,880,109
1969	187,209	21,874,844	202,760	26,485,909	0	0	3,194	3,194	296,409	30,947,630
1970	275,229	29,015,635	258,064	35,392,463	0	0	15,133	15,133	316,704	40,132,602
1971	385,331	37,271,987	316,558	45,673,121	0	0	15,960	15,960	320,478	50,839,571
1972	448,411	44,097,100	354,216	53,644,303	0	0	17,346	17,346	321,113	60,022,350
1973	470,558	46,336,330	357,625	56,237,276	0	0	17,347	17,347	321,784	62,624,106
1974	483,643	48,361,029	372,407	58,505,230	0	0	17,348	17,348	322,197	65,420,244
1975	497,117	49,324,197	376,809	59,696,379	0	0	17,350	17,350	323,653	67,299,951
1976	510,055	50,177,082	381,090	60,741,738	0	0	17,351	17,351	324,073	68,741,639
1977	518,152	50,867,500	385,403	61,568,093	0	0	17,354	17,354	324,913	69,922,677
1978	523,071	51,467,390	391,052	62,270,307	0	0	17,355	17,355	325,992	71,142,497
1979	526,596	52,272,013	399,967	63,176,330	0	0	17,357	17,357	327,464	72,588,682
1980	530,010	53,680,452	417,468	64,721,242	0	0	17,358	17,358	328,824	74,637,909
1981	547,244	56,713,377	450,170	68,243,080	0	0	17,360	17,360	331,839	78,789,160
1982	545,938	57,513,025	461,603	69,053,627	0	0	17,362	17,362	331,495	80,093,827
1983	558,300	59,092,759	477,715	70,967,123	0	0	17,362	17,362	332,315	82,235,750
1984	576,867	60,380,342	487,253	72,672,316	0	0	17,363	17,363	335,997	84,754,881
1985	590,331	61,218,962	492,521	73,811,570	0	0	17,364	17,364	340,240	86,595,567
1986	600,173	61,749,789	495,384	74,546,452	0	0	17,366	17,366	341,073	88,779,916
1987	610,225	62,211,155	497,167	75,215,241	0	0	17,367	17,367	341,906	91,385,049
1988	618,515	62,618,049	499,029	75,771,510	0	0	17,369	17,369	343,404	93,560,671
1989	625,350	63,155,889	503,273	76,443,702	0	0	17,372	17,372	346,261	95,053,401
1990	641,991	64,292,982	511,556	77,914,526	0	0	17,374	17,374	348,580	97,175,227
1991	659,172	65,325,004	518,023	79,253,856	0	0	17,378	17,378	353,498	98,756,585
1992	680,893	66,557,947	525,050	80,858,177	0	0	17,380	17,380	361,432	100,619,872
1993	702,834	67,790,391	531,305	82,419,741	0	0	17,383	17,383	365,769	102,422,068
1994	742,817	69,537,998	536,981	84,634,474	0	0	17,384	17,384	368,955	105,355,481
1995	766,832	70,509,271	539,756	85,888,649	0	0	17,385	17,385	370,807	109,271,086
1996	786,085	71,423,873	543,701	87,052,366	0	0	17,385	17,385	373,123	119,130,705
1997	837,378	72,450,403	546,322	88,403,917	0	0	17,385	17,385	374,290	131,199,232
1998	923,119	73,310,946	548,542	90,078,892	0	0	17,385	17,385	376,173	135,652,538
1999	1,964,278	74,351,446	554,721	93,213,394	0	0	17,385	17,385	376,766	138,865,704
2000	2,947,629	75,624,424	566,433	96,470,711	0	0	17,385	17,385	377,308	142,173,503
2001	2,952,666	75,961,923	568,644	96,907,370	0	0	17,385	17,385	377,781	142,634,731
2002	2,952,772	75,973,614	568,759	96,922,157	0	0	17,385	17,385	377,896	142,651,542
2003	2,952,842	75,981,279	568,833	96,931,852	0	0	17,385	17,385	377,972	142,662,565
2004	2,952,874	75,984,815	568,868	96,936,324	0	0	17,385	17,385	378,007	142,667,612
2005	2,952,874	75,984,815	568,868	96,936,324	0	0	17,385	17,385	378,007	142,667,612
2006	2,952,874	75,984,815	568,868	96,936,324	0	0	17,385	17,385	378,007	142,667,612
2007	2,952,874	75,984,815	568,868	96,936,324	0	0	17,385	17,385	378,007	142,667,612
2008	2,952,874	75,984,815	568,868	96,936,324	0	0	17,385	17,385	378,007	142,667,612
2009	2,952,874	75,984,815	568,868	96,936,324	0	0	17,385	17,385	378,007	142,667,612
2010	2,952,874	75,984,815	568,868	96,936,324	0	0	17,385	17,385	378,007	142,667,612
2011	2,952,874	75,984,815	568,868	96,936,324	0	0	17,385	17,385	378,007	142,667,612
2012	2,952,874	75,984,815	568,868	96,936,324	0	0	17,385	17,385	378,007	142,667,612
2013	2,944,735	75,295,537	568,868	96,127,624	0	0	17,385	17,385	334,848	141,232,717
2014	2,939,684	74,726,375	559,514	95,369,799	0	0	17,385	17,385	307,910	140,152,715
2015	2,931,043	73,808,243	551,144	94,214,423	0	0	16,980	16,980	277,836	138,376,695
2016	2,914,980	72,092,542	535,523	92,064,916	0	0	16,820	16,820	260,879	135,871,562
2017	2,881,732	68,306,685	500,871	87,361,772	0	0	16,823	16,823	220,932	130,732,387
2018	2,833,062	61,669,754	435,869	79,392,319	0	0	16,820	16,820	145,525	122,213,389
2019	2,766,299	54,179,552	366,788	70,310,684	0	0	14,192	14,192	81,598	112,766,491
2020	2,678,563	47,070,003	311,789	61,398,110	0	0	2,253	2,253	61,303	103,709,554
2021	2,568,706	38,840,604	253,558	51,113,633	0	0	1,426	1,426	57,529	93,378,311
2022	2,505,760	32,030,248	216,044	43,140,617	0	0	39	39	56,894	85,382,329
2023	2,483,664	29,796,564	212,689	40,546,564	0	0	39	39	56,223	82,744,325
2024	2,470,599	27,773,997	197,927	38,277,492	0	0	37	37	55,810	80,463,319
2025	2,457,149	26,813,451	193,551	37,085,135	0	0	35	35	54,354	79,247,411
2026	2,444,223	25,961,907	189,284	36,039,133	0	0	34	34	53,934	77,880,221
2027	2,436,136	25,272,565	184,981	35,211,351	0	0	31	31	53,094	77,023,267
2028	2,431,223	24,673,375	179,339	34,504,480	0	0	30	30	52,015	76,272,992
2029	2,427,708	23,869,887	170,435	33,597,638	0	0	28	28	50,543	75,331,213
2030	2,424,305	22,462,618	152,945	32,051,966	0	0	27	27	49,183	73,738,858
2031	2,407,151	19,438,526	120,330	28,525,869	0	0	25	25	46,168	70,098,472
2032	2,408,431	18,635,973	108,868	27,715,481	0	0	24	24	46,512	69,273,641
2033	2,396,097	17,059,407	92,787	25,801,089	0	0	23	23	45,692	67,281,014
2034	2,377,563	15,775,371	83,283	24,094,315	0	0	22	22	42,010	65,387,896
2035	2,364,112	14,938,140	78,029	22,953,044	0	0	21	21	37,767	63,921,830
Total	117,481,588	3,682,940,269	27,852,622	4,637,956,409	0	0	869,164	869,164	18,649,220	6,718,235,523

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 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	9,699	8,868	0	18,567	0	0	0
1963	0	0	0	38,048	34,788	82,896	155,732	0	0	0
1964	0	0	0	41,148	38,323	91,320	170,791	0	0	0
1965	0	0	0	78,529	75,616	195,792	349,937	0	0	0
1966	0	0	0	79,753	78,779	218,544	377,076	0	0	0
1967	0	0	0	127,896	123,665	335,225	586,786	0	0	0
1968	130	0	130	126,058	120,563	333,506	580,127	11,800	21,769	33,569
1969	80,875	0	80,875	145,410	138,051	372,584	656,045	63,112	116,434	179,546
1970	94,872	0	94,872	128,993	120,246	320,663	569,902	74,187	136,866	211,053
1971	45,579	0	45,579	113,071	108,346	296,004	517,421	74,010	136,540	210,550
1972	37,895	0	37,895	122,407	117,483	334,366	574,256	79,195	146,106	225,301
1973	32,993	0	32,993	122,738	116,785	325,727	565,250	75,714	139,683	215,397
1974	46,498	0	46,498	154,434	146,929	403,081	704,444	76,530	141,188	217,718
1975	37,707	0	37,707	189,176	182,087	513,823	885,086	92,604	170,844	263,448
1976	60,786	0	60,786	203,063	193,436	524,814	921,313	94,935	175,143	270,078
1977	78,400	0	78,400	179,870	169,065	500,102	849,037	102,945	189,921	292,866
1978	56,318	0	56,318	239,300	228,853	647,828	1,115,981	104,066	191,989	296,055
1979	73,852	0	73,852	236,987	232,104	666,745	1,135,836	100,900	186,148	287,048
1980	81,769	0	81,769	389,575	372,184	1,010,831	1,772,590	124,629	229,926	354,555
1981	100,757	0	100,757	316,826	301,739	832,986	1,451,551	137,966	254,530	392,496
1982	192,039	0	192,039	390,049	372,607	1,106,517	1,869,173	140,724	259,618	400,342
1983	80,247	0	80,247	438,683	429,108	1,269,693	2,137,484	169,515	312,736	482,251
1984	106,521	0	106,521	591,512	565,965	1,818,222	2,975,699	200,319	369,565	569,884
1985	215,525	0	215,525	679,846	659,942	1,850,833	3,190,621	246,238	454,279	700,517
1986	203,712	0	203,712	614,726	584,406	1,787,226	2,986,358	233,089	430,022	663,111
1987	293,982	0	293,982	682,493	647,776	1,989,611	3,319,880	228,427	460,003	688,430
1988	313,962	1	313,963	679,201	657,438	1,915,369	3,252,008	258,187	559,844	818,031
1989	402,074	683,810	1,085,884	717,808	713,276	1,899,434	3,330,518	243,963	666,942	910,905
1990	654,541	668,617	1,323,158	778,487	776,554	2,120,993	3,676,034	308,923	674,628	983,551
1991	724,830	858,288	1,583,118	540,983	522,711	1,515,644	2,579,338	302,167	673,485	975,652
1992	481,732	708,448	1,190,180	795,092	854,185	2,251,411	3,900,688	338,762	722,876	1,061,638
1993	527,775	717,264	1,245,039	1,283,594	1,264,035	3,344,959	5,892,588	389,045	739,644	1,128,689
1994	571,760	654,242	1,226,002	1,366,731	1,311,006	3,556,218	6,233,955	481,200	888,620	1,369,820
1995	537,535	657,263	1,194,798	1,226,531	1,182,033	3,204,416	5,612,980	473,886	873,885	1,347,771
1996	599,289	1,000,524	1,599,813	1,176,890	1,117,130	2,986,721	5,280,741	603,663	1,113,278	1,716,941
1997	560,775	787,042	1,347,817	1,115,899	1,046,275	2,832,155	4,994,329	461,081	857,344	1,318,425
1998	763,266	1,269,246	2,032,512	1,383,613	1,271,292	3,521,500	6,176,405	732,145	2,255,885	2,988,030
1999	731,290	1,240,109	1,971,399	1,324,716	1,285,053	3,501,317	6,111,086	691,459	1,974,537	2,665,996
2000	730,816	1,270,427	2,001,243	1,329,588	1,289,595	3,526,856	6,146,039	709,964	2,211,634	2,921,598
2001	747,856	1,299,606	2,047,462	1,352,846	1,312,788	3,594,378	6,260,012	714,572	2,231,353	2,945,925
2002	749,791	1,302,676	2,052,467	1,355,822	1,315,671	3,602,286	6,273,779	716,056	2,235,489	2,951,545
2003	740,518	1,276,134	2,016,652	1,325,577	1,288,057	3,536,542	6,150,176	716,167	2,235,903	2,952,070
2004	741,341	1,277,996	2,019,337	1,326,297	1,288,723	3,538,179	6,153,199	716,851	2,238,981	2,955,832
2005	740,090	1,275,162	2,015,252	1,325,202	1,287,708	3,535,686	6,148,596	715,810	2,234,298	2,950,108
2006	740,012	1,274,986	2,014,998	1,325,133	1,287,647	3,535,528	6,148,308	715,745	2,234,005	2,949,750
2007	740,209	1,275,429	2,015,638	1,325,306	1,287,806	3,535,923	6,149,035	715,911	2,234,746	2,950,657
2008	740,401	1,275,867	2,016,268	1,325,473	1,287,962	3,536,303	6,149,738	716,068	2,235,460	2,951,528
2009	740,132	1,275,261	2,015,393	1,325,238	1,287,744	3,535,771	6,148,753	715,846	2,234,458	2,950,304
2010	740,423	1,275,913	2,016,336	1,325,492	1,287,976	3,536,344	6,149,812	716,085	2,235,538	2,951,623
2011	740,436	1,275,944	2,016,380	1,325,503	1,287,989	3,536,369	6,149,861	716,096	2,235,587	2,951,683
2012	740,512	1,276,116	2,016,628	1,325,569	1,288,049	3,536,523	6,150,141	716,160	2,235,871	2,952,031
2013	740,885	1,276,958	2,017,843	1,325,894	1,288,351	3,537,264	6,151,509	716,469	2,237,262	2,953,731
2014	741,538	1,278,436	2,019,974	1,326,464	1,288,881	3,538,567	6,153,912	717,012	2,239,707	2,956,719
2015	741,584	1,278,535	2,020,119	1,326,503	1,288,915	3,538,653	6,154,071	717,048	2,239,867	2,956,915
2016	741,588	1,278,545	2,020,133	1,326,507	1,288,919	3,538,662	6,154,088	717,052	2,239,885	2,956,937
2017	741,642	1,278,664	2,020,306	1,326,553	1,288,963	3,538,767	6,154,283	717,095	2,240,082	2,957,177
2018	741,673	1,278,738	2,020,411	1,326,582	1,288,989	3,538,829	6,154,400	717,122	2,240,203	2,957,325
2019	741,674	1,278,741	2,020,415	1,326,582	1,288,989	3,538,831	6,154,402	717,123	2,240,205	2,957,328
2020	741,549	1,278,458	2,020,007	1,326,472	1,288,887	3,538,583	6,153,942	717,019	2,239,739	2,956,758
2021	741,526	1,278,405	2,019,931	1,326,452	1,288,869	3,538,536	6,153,857	716,999	2,239,648	2,956,647
2022	741,619	1,278,614	2,020,233	1,326,533	1,288,944	3,538,722	6,154,199	717,076	2,239,997	2,957,073
2023	741,602	1,278,574	2,020,176	1,326,519	1,288,930	3,538,685	6,154,134	717,062	2,239,929	2,956,991
2024	741,541	1,278,439	2,019,980	1,326,466	1,288,882	3,538,566	6,153,914	717,012	2,239,708	2,956,720
2025	741,613	1,278,601	2,020,214	1,326,528	1,288,939	3,538,710	6,154,177	717,071	2,239,976	2,957,047
2026	741,499	1,278,344	2,019,843	1,326,430	1,288,847	3,538,482	6,153,759	716,977	2,239,551	2,956,528
2027	741,532	1,278,416	2,019,948	1,326,457	1,288,872	3,538,547	6,153,876	717,004	2,239,668	2,956,672
2028	741,508	1,278,362	2,019,870	1,326,434	1,288,853	3,538,501	6,153,788	716,984	2,239,581	2,956,565
2029	741,493	1,278,332	2,019,825	1,326,424	1,288,843	3,538,472	6,153,739	716,973	2,239,530	2,956,503
2030	741,409	1,278,138	2,019,547	1,326,350	1,288,774	3,538,301	6,153,425	716,902	2,239,210	2,956,112
2031	741,468	1,278,275	2,019,743	1,326,402	1,288,821	3,538,422	6,153,645	716,951	2,239,435	2,956,386
2032	741,369	1,278,047	2,019,416	1,326,313	1,288,741	3,538,223	6,153,277	716,868	2,239,059	2,955,927
2033	741,470	1,278,280	2,019,750	1,326,404	1,288,824	3,538,427	6,153,655	716,954	2,239,444	2,956,398
2034	741,404	1,278,127	2,019,531	1,326,344	1,288,769	3,538,290	6,153,403	716,898	2,239,193	2,956,091
2035	741,436	1,278,200	2,019,636	1,326,372	1,288,795	3,538,357	6,153,524	716,924	2,239,313	2,956,237
Total	35,476,445	55,278,600	90,755,045	66,630,866	64,610,014	177,951,161	309,192,041	33,507,312	97,067,793	130,575,105

Table B-16A

Minimum OMP&R 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)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	37,806	1,963	5,639	60,702	678,085	2,007	2,073	77,592	865,867
1969	45,479	2,237	30,159	80,553	1,197,126	2,286	2,086	90,772	1,450,698
1970	46,969	2,292	35,450	96,672	1,381,493	2,345	2,158	93,407	1,660,786
1971	47,997	2,315	35,365	106,654	1,643,161	2,366	2,288	94,874	1,935,020
1972	49,867	2,414	37,845	122,312	1,729,170	2,470	2,254	98,776	2,045,108
1973	50,005	2,386	36,180	125,553	1,719,871	2,439	2,310	98,329	2,037,073
1974	52,816	2,557	36,571	135,661	1,823,063	2,615	2,529	104,610	2,160,422
1975	66,962	3,242	44,250	162,739	2,235,242	3,317	3,191	132,663	2,651,606
1976	66,504	3,327	45,365	159,304	2,215,996	3,404	2,919	133,940	2,630,759
1977	75,596	3,810	49,192	189,661	2,522,288	3,900	3,708	152,836	3,000,991
1978	70,684	3,504	49,729	174,888	2,427,099	3,582	3,644	141,667	2,874,797
1979	68,877	3,437	48,146	173,677	2,378,341	3,514	3,492	138,489	2,817,973
1980	95,897	4,724	59,554	235,741	3,146,579	4,828	4,777	191,576	3,743,676
1981	118,425	5,963	65,930	266,075	3,433,956	6,098	5,187	239,275	4,140,909
1982	134,304	6,720	67,195	312,335	3,855,139	6,875	6,391	270,516	4,659,475
1983	185,029	9,249	80,945	426,738	5,033,499	9,457	8,501	372,444	6,125,862
1984	194,424	9,666	95,693	472,362	5,642,027	9,884	8,734	390,279	6,823,069
1985	214,221	10,610	117,642	516,720	6,354,136	10,850	10,018	429,206	7,663,403
1986	212,519	10,565	111,262	542,486	6,491,360	10,804	10,719	426,594	7,816,309
1987	204,166	10,211	109,122	529,873	6,350,525	10,445	10,501	411,070	7,635,913
1988	204,516	10,265	123,353	518,764	6,413,614	10,498	10,377	412,516	7,703,903
1989	224,588	11,297	116,518	565,243	6,762,167	11,554	11,127	453,520	8,156,014
1990	269,450	13,580	147,544	660,006	8,070,395	13,889	13,126	544,644	9,732,634
1991	273,626	13,744	143,655	659,729	8,075,776	14,055	13,091	552,121	9,745,797
1992	316,637	15,968	161,736	761,342	9,080,138	16,331	18,178	640,180	11,010,510
1993	361,322	18,064	185,633	834,997	10,417,159	18,476	19,625	727,352	12,582,628
1994	308,491	15,454	223,881	737,057	9,771,915	15,808	16,400	621,662	11,710,668
1995	390,679	19,671	219,426	889,936	11,091,972	20,120	21,036	789,307	13,442,147
1996	393,061	20,018	284,463	900,768	12,003,864	20,477	21,525	798,745	14,442,921
1997	382,882	19,499	212,039	904,674	10,894,219	19,945	19,433	779,480	13,232,171
1998	491,458	24,308	288,797	1,185,633	13,299,818	24,865	24,066	992,353	16,331,298
1999	438,361	21,906	283,463	1,135,502	12,652,071	22,406	25,104	882,262	15,461,075
2000	439,821	21,951	278,585	1,146,771	12,709,940	22,450	24,851	884,607	15,528,976
2001	414,168	20,597	279,961	1,087,089	12,109,863	21,068	23,931	831,530	14,788,207
2002	415,209	20,650	280,579	1,089,453	12,138,720	21,120	23,981	833,627	14,823,339
2003	415,360	20,656	280,624	1,001,243	12,142,900	21,129	23,985	833,917	14,739,814
2004	415,949	20,685	280,881	1,002,589	12,158,378	21,157	24,002	835,090	14,758,731
2005	415,051	20,642	280,492	1,000,539	12,134,833	21,112	23,977	833,302	14,729,948
2006	414,994	20,639	280,469	1,000,415	12,133,375	21,111	23,975	833,191	14,728,169
2007	415,139	20,647	280,530	1,000,747	12,137,177	21,117	23,979	833,479	14,732,815
2008	415,274	20,652	280,588	1,001,049	12,140,663	21,124	23,983	833,746	14,737,079
2009	415,082	20,643	280,506	1,000,613	12,135,637	21,113	23,977	833,365	14,730,936
2010	415,288	20,652	280,594	1,001,084	12,141,051	21,124	23,983	833,776	14,737,552
2011	415,297	20,653	280,600	1,001,102	12,141,300	21,127	23,983	833,794	14,737,856
2012	415,351	20,656	280,622	1,001,227	12,142,726	21,129	23,985	833,900	14,739,596
2013	415,617	20,669	280,740	1,001,835	12,149,717	21,140	23,992	834,432	14,748,142
2014	416,088	20,691	280,940	1,002,904	12,161,991	21,164	24,006	835,365	14,763,149
2015	416,118	20,692	280,956	1,002,975	12,162,812	21,166	24,007	835,426	14,764,152
2016	416,122	20,692	280,958	1,002,986	12,162,897	21,166	24,007	835,434	14,764,262
2017	416,160	20,696	280,973	1,003,069	12,163,886	21,169	24,008	835,508	14,765,469
2018	416,182	20,697	280,982	1,003,122	12,164,490	21,169	24,008	835,554	14,766,204
2019	416,183	20,697	280,982	1,003,125	12,164,504	21,169	24,008	835,556	14,766,224
2020	416,094	20,691	280,942	1,002,918	12,162,154	21,164	24,006	835,377	14,763,346
2021	416,076	20,691	280,935	1,002,880	12,161,715	21,164	24,005	835,344	14,762,810
2022	416,143	20,693	280,966	1,003,031	12,163,450	21,167	24,008	835,476	14,764,934
2023	416,129	20,692	280,960	1,003,004	12,163,123	21,167	24,007	835,450	14,764,532
2024	416,088	20,691	280,941	1,002,905	12,162,005	21,164	24,006	835,365	14,763,165
2025	416,138	20,692	280,965	1,003,024	12,163,339	21,167	24,008	835,467	14,764,800
2026	416,058	20,691	280,930	1,002,835	12,161,216	21,162	24,005	835,305	14,762,202
2027	416,079	20,691	280,936	1,002,888	12,161,811	21,164	24,005	835,350	14,762,924
2028	416,062	20,691	280,930	1,002,848	12,161,356	21,163	24,005	835,315	14,762,370
2029	416,053	20,691	280,926	1,002,827	12,161,105	21,161	24,005	835,296	14,762,064
2030	415,993	20,688	280,900	1,002,690	12,159,503	21,159	24,003	835,176	14,760,112
2031	416,036	20,689	280,918	1,002,786	12,160,629	21,161	24,005	835,261	14,761,485
2032	415,963	20,686	280,886	1,002,625	12,158,751	21,158	24,002	835,118	14,759,189
2033	416,037	20,689	280,920	1,002,790	12,160,674	21,161	24,005	835,263	14,761,539
2034	415,987	20,688	280,900	1,002,677	12,159,410	21,159	24,003	835,169	14,759,993
2035	416,011	20,689	280,907	1,002,732	12,160,012	21,160	24,004	835,212	14,760,727
Total	21,085,018	1,050,566	13,658,166	51,043,754	618,868,377	1,074,535	1,175,278	42,382,600	750,338,294

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~~ Kern County Water Agency (23)	~~San Gorgonio Pass~~ Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	65,073	28,084	11,697	2,958	19,290	1,088	24,380	8,171	52,314	14,399
1969	86,340	70,345	15,522	3,924	25,595	1,444	32,346	10,843	69,418	19,106
1970	107,806	84,580	19,391	4,902	31,979	1,802	40,392	13,540	86,726	23,866
1971	178,822	105,978	32,230	8,152	53,149	2,991	66,998	22,459	144,137	39,636
1972	363,554	202,628	106,741	30,966	176,039	6,603	213,029	48,104	548,122	144,113
1973	404,662	222,767	121,341	34,673	200,118	7,347	243,320	53,976	724,532	190,155
1974	434,864	235,526	130,629	37,060	215,431	7,678	262,736	56,382	786,108	207,020
1975	504,790	289,504	151,033	43,179	249,085	9,082	303,109	65,579	905,424	238,842
1976	559,011	262,418	160,688	44,454	265,002	10,030	325,512	73,253	964,525	256,572
1977	675,504	335,750	184,810	47,744	304,794	11,886	381,160	87,354	1,069,446	289,792
1978	600,365	377,294	187,077	54,183	308,526	10,710	373,258	78,308	1,148,765	300,858
1979	661,198	349,137	196,304	52,208	323,742	12,129	401,574	87,141	1,125,445	302,531
1980	858,104	415,433	253,133	71,932	417,470	15,436	508,471	112,865	1,518,573	401,273
1981	998,853	509,924	284,299	73,341	468,862	18,003	586,686	131,667	1,544,259	419,446
1982	1,130,189	558,581	321,418	89,683	530,085	20,220	650,196	148,212	1,872,762	498,469
1983	1,745,779	818,077	450,240	119,301	742,532	30,658	922,513	225,898	2,374,091	639,976
1984	2,106,901	943,583	549,148	150,300	905,660	36,830	1,112,902	271,335	3,020,614	803,985
1985	2,195,677	1,071,935	591,836	159,644	976,048	39,601	1,206,156	281,987	3,262,963	869,728
1986	2,324,747	1,107,716	621,068	163,329	1,024,261	40,265	1,273,644	297,604	3,330,049	896,209
1987	2,318,403	1,014,669	617,678	164,587	1,018,671	40,969	1,262,044	301,828	3,353,447	900,941
1988	2,319,930	1,049,052	653,006	176,635	1,076,938	40,881	1,329,283	300,518	3,604,974	965,668
1989	2,284,966	1,090,572	614,376	170,284	1,013,230	39,581	1,243,170	293,384	3,507,201	934,471
1990	2,606,649	1,262,945	702,220	199,574	1,158,107	44,979	1,410,764	332,375	4,055,741	1,070,561
1991	2,734,442	1,201,562	762,908	210,361	1,258,194	48,886	1,544,363	357,778	4,343,468	1,149,159
1992	2,769,363	1,571,672	749,265	198,140	1,235,688	49,626	1,536,363	361,310	4,129,549	1,114,756
1993	3,126,740	1,698,933	855,044	235,613	1,410,144	56,405	1,732,135	413,640	5,044,159	1,344,135
1994	2,813,472	1,603,792	821,869	232,046	1,355,421	51,061	1,690,134	374,694	5,168,674	1,368,166
1995	3,099,247	1,720,096	859,984	235,371	1,418,287	58,364	1,789,287	442,158	5,098,054	1,343,517
1996	3,053,533	1,954,056	879,505	229,953	1,450,478	56,241	1,856,367	421,190	4,904,891	1,313,226
1997	3,179,447	1,876,939	933,770	284,530	1,539,988	58,760	1,889,066	441,416	5,946,225	1,545,403
1998	4,475,037	2,272,889	1,182,099	327,303	1,949,503	84,161	3,506,853	632,765	6,571,952	1,762,735
1999	3,909,956	2,201,287	1,042,995	289,976	1,720,106	68,447	3,198,456	513,739	5,960,965	1,593,578
2000	3,960,764	2,198,845	1,040,178	287,123	1,715,456	69,544	3,192,819	521,445	5,918,432	1,579,720
2001	3,917,181	2,138,268	1,009,687	273,366	1,665,175	68,614	3,141,167	514,269	5,619,563	1,511,196
2002	3,925,511	2,239,898	1,008,186	269,341	1,662,695	68,766	3,148,026	515,375	5,549,670	1,498,475
2003	3,837,374	2,155,717	1,039,105	301,684	1,713,701	68,843	3,101,756	504,500	6,124,767	1,605,481
2004	3,843,990	2,121,138	1,003,520	255,386	1,654,990	68,997	3,108,735	505,550	5,302,418	1,446,151
2005	3,833,917	2,171,166	1,024,979	285,908	1,690,397	68,763	3,098,115	503,955	5,844,160	1,550,154
2006	3,833,308	2,151,446	1,022,942	283,677	1,687,044	68,748	3,097,473	503,860	5,804,533	1,542,319
2007	3,834,973	2,162,571	1,011,311	268,745	1,667,848	68,789	3,099,253	504,124	5,539,228	1,490,849
2008	3,836,422	2,184,072	1,027,800	288,280	1,695,054	68,821	3,100,754	504,351	5,886,552	1,558,847
2009	3,834,278	2,135,894	1,005,082	261,448	1,657,567	68,773	3,098,495	504,011	5,409,440	1,465,406
2010	3,836,586	2,167,429	1,025,355	285,229	1,691,027	68,825	3,100,931	504,378	5,832,272	1,548,286
2011	3,836,700	2,163,979	1,013,475	270,664	1,671,414	68,825	3,101,048	504,395	5,573,426	1,497,802
2012	3,837,309	2,157,998	1,027,838	287,949	1,695,120	68,840	3,101,695	504,492	5,880,665	1,557,845
2013	3,840,316	2,173,629	1,015,495	271,584	1,674,752	68,915	3,104,868	504,970	5,589,996	1,501,643
2014	3,845,544	2,175,859	1,021,824	277,078	1,685,187	69,030	3,110,375	505,797	5,688,050	1,521,647
2015	3,845,883	2,163,141	1,034,447	292,359	1,706,020	69,039	3,110,722	505,847	5,959,663	1,574,689
2016	3,845,934	2,176,094	1,011,974	264,882	1,668,940	69,040	3,110,784	505,855	5,471,306	1,479,428
2017	3,846,346	2,174,472	1,032,839	290,189	1,703,361	69,052	3,111,219	505,923	5,921,140	1,567,256
2018	3,846,628	2,175,888	1,018,953	273,109	1,680,447	69,059	3,111,514	505,965	5,617,537	1,508,071
2019	3,846,623	2,173,058	1,020,495	274,996	1,682,993	69,059	3,111,511	505,964	5,651,080	1,514,615
2020	3,845,616	2,164,597	1,031,323	288,651	1,700,861	69,032	3,110,452	505,808	5,893,740	1,561,788
2021	3,845,442	2,169,273	1,016,435	270,534	1,676,291	69,030	3,110,270	505,780	5,571,748	1,498,939
2022	3,846,184	2,169,203	1,032,146	289,411	1,702,219	69,047	3,111,051	505,898	5,907,287	1,564,527
2023	3,846,030	2,171,804	1,035,143	293,140	1,707,164	69,043	3,110,886	505,870	5,973,552	1,577,427
2024	3,845,555	2,163,669	1,001,659	252,441	1,651,920	69,030	3,110,389	505,798	5,250,188	1,436,226
2025	3,846,132	2,168,392	1,047,528	308,224	1,727,602	69,045	3,110,997	505,891	6,241,641	1,629,747
2026	3,845,224	2,164,836	1,008,625	261,092	1,663,413	69,024	3,110,040	505,746	5,403,908	1,466,162
2027	3,845,480	2,168,608	1,020,684	275,715	1,683,310	69,030	3,110,311	505,788	5,663,813	1,516,910
2028	3,845,279	2,166,781	1,031,224	288,679	1,700,701	69,025	3,110,091	505,754	5,894,205	1,561,823
2029	3,845,162	2,171,545	1,029,333	286,416	1,697,574	69,022	3,109,969	505,734	5,853,947	1,553,947
2030	3,844,477	2,163,679	1,012,954	266,705	1,670,557	69,008	3,109,247	505,625	5,503,620	1,485,489
2031	3,844,972	2,167,605	1,035,389	293,892	1,707,574	69,020	3,109,775	505,706	5,986,849	1,579,846
2032	3,844,167	2,158,457	1,007,370	260,013	1,661,348	69,002	3,108,923	505,578	5,384,680	1,462,233
2033	3,844,976	2,173,622	1,042,819	302,967	1,719,831	69,020	3,109,776	505,706	6,148,155	1,611,313
2034	3,844,438	2,165,835	1,008,732	261,563	1,663,594	69,008	3,109,210	505,621	5,412,246	1,467,654
2035	3,844,703	2,137,947	1,037,469	296,551	1,711,007	69,013	3,109,489	505,664	6,034,062	1,589,010
Total	193,302,848	106,514,139	51,877,642	14,205,297	85,556,577	3,464,905	144,938,803	25,488,466	292,545,112	78,045,213

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	0	18,567
1963	0	0	0	0	0	0	0	0	12,626	168,358
1964	0	0	0	0	0	0	0	0	13,938	184,729
1965	0	0	0	0	0	0	0	0	28,937	378,874
1966	0	0	0	0	0	0	0	0	31,321	408,397
1967	0	0	0	0	0	0	0	0	47,719	634,505
1968	8,819	972,744	9,504	1,218,521	0	0	0	0	46,945	2,745,159
1969	11,706	1,295,613	12,610	1,654,812	0	0	0	0	52,963	4,074,939
1970	14,621	1,624,573	15,745	2,069,923	0	0	0	0	69,745	4,676,281
1971	24,302	2,716,582	26,120	3,421,556	0	0	54	54	55,532	6,185,712
1972	89,132	8,038,457	68,368	10,035,856	0	0	40	40	80,412	12,998,868
1973	117,781	9,890,314	78,312	12,289,298	0	0	1	1	54,219	15,194,231
1974	128,166	11,581,499	83,451	14,166,550	0	0	143	143	76,783	17,372,558
1975	147,900	13,584,540	101,892	16,593,959	0	0	1,069	1,069	84,546	20,517,421
1976	158,663	12,862,497	94,799	16,037,424	0	0	139	139	106,717	20,027,216
1977	178,774	16,203,703	121,966	19,892,683	0	0	892	892	98,617	24,213,486
1978	186,454	17,827,586	132,549	21,585,933	0	0	39	39	100,784	26,029,907
1979	186,697	16,414,559	126,776	20,239,441	0	0	3,235	3,235	119,353	24,676,738
1980	248,428	20,924,860	154,049	25,900,027	0	0	416	416	178,813	32,031,846
1981	258,572	23,680,092	186,190	29,160,194	0	0	3,847	3,847	185,119	35,434,873
1982	308,321	28,050,490	209,514	34,388,140	0	0	10,956	10,956	182,130	41,702,255
1983	394,703	38,421,201	321,503	47,206,472	0	0	(422)	(422)	220,869	56,252,763
1984	497,178	45,604,902	382,125	56,385,463	0	0	643	643	226,137	67,087,416
1985	537,253	50,689,099	422,636	62,304,563	0	0	2,599	2,599	342,260	74,419,488
1986	552,993	53,066,087	444,295	65,142,267	0	0	2,595	2,595	279,744	77,094,096
1987	556,370	49,838,405	402,669	61,790,681	0	0	2,595	2,595	343,104	74,074,585
1988	596,674	51,583,203	409,275	64,106,037	0	0	2,600	2,600	366,269	76,562,811
1989	578,064	52,747,605	431,950	64,948,854	0	0	2,672	2,672	422,706	78,857,553
1990	662,885	60,497,184	489,325	74,493,309	0	0	2,687	2,687	472,555	90,683,928
1991	710,891	60,861,143	470,339	75,653,494	0	0	2,730	2,730	213,673	90,753,802
1992	688,050	67,255,204	499,843	82,158,829	0	0	2,774	2,774	443,046	99,767,665
1993	831,890	69,091,939	541,610	86,382,387	0	0	2,529	2,529	600,985	107,834,845
1994	846,608	65,747,852	472,161	82,545,950	0	0	3,058	3,058	609,102	103,698,555
1995	829,947	69,540,990	522,741	86,958,043	0	0	3,210	3,210	533,199	109,092,148
1996	808,858	74,111,076	565,098	91,604,472	0	0	3,370	3,370	568,010	115,216,268
1997	959,232	78,002,169	573,569	97,230,514	0	0	3,437	3,437	480,578	118,607,271
1998	1,078,369	91,506,519	678,641	116,028,826	0	0	3,506	3,506	636,770	144,197,347
1999	973,930	85,769,089	661,739	107,904,263	0	0	3,610	3,610	657,362	134,774,791
2000	966,582	85,621,594	663,515	107,736,017	0	0	3,683	3,683	663,080	135,000,636
2001	924,022	81,986,675	643,136	103,412,319	0	0	3,683	3,683	678,245	130,135,853
2002	915,559	85,218,698	672,903	106,693,103	0	0	3,683	3,683	680,239	133,478,155
2003	995,381	84,078,078	658,727	106,185,114	0	0	3,683	3,683	680,224	132,727,733
2004	890,828	79,840,999	648,677	100,691,379	0	0	3,683	3,683	681,096	127,263,257
2005	959,211	83,730,767	663,205	105,424,697	0	0	3,683	3,683	679,768	131,952,052
2006	954,094	82,837,812	657,400	104,444,656	0	0	3,683	3,683	679,686	130,969,250
2007	920,325	82,757,616	660,697	103,986,329	0	0	3,683	3,683	679,896	130,518,053
2008	964,848	84,685,512	667,040	106,468,353	0	0	3,683	3,683	680,099	133,006,748
2009	903,669	80,834,031	652,846	101,830,940	0	0	3,683	3,683	679,813	128,359,822
2010	957,921	83,440,093	662,153	105,120,485	0	0	3,683	3,683	680,119	131,659,610
2011	924,842	83,079,397	661,140	104,367,107	0	0	3,683	3,683	680,134	130,906,704
2012	964,169	83,212,744	659,393	104,956,057	0	0	3,683	3,683	680,213	131,498,349
2013	927,272	83,158,668	664,040	104,496,148	0	0	3,683	3,683	680,609	131,051,665
2014	940,258	83,472,944	664,784	104,978,377	0	0	3,683	3,683	681,300	131,557,114
2015	975,006	84,042,686	661,054	105,940,556	0	0	3,683	3,683	681,347	132,520,843
2016	912,579	82,667,693	664,862	103,849,371	0	0	3,683	3,683	681,352	130,429,826
2017	970,123	84,313,276	664,394	106,169,590	0	0	3,683	3,683	681,408	132,751,916
2018	931,336	83,539,448	664,813	104,942,768	0	0	3,683	3,683	681,443	131,526,234
2019	935,623	83,288,258	663,982	104,738,257	0	0	3,683	3,683	681,443	131,321,752
2020	966,560	84,328,899	661,477	106,128,804	0	0	3,683	3,683	681,310	132,707,850
2021	925,384	82,598,105	662,850	103,920,081	0	0	3,683	3,683	681,285	130,498,294
2022	968,344	83,713,606	662,840	105,541,763	0	0	3,683	3,683	681,383	132,123,268
2023	976,796	84,188,406	663,603	106,118,864	0	0	3,683	3,683	681,366	132,699,746
2024	884,284	81,950,666	661,202	102,783,027	0	0	3,683	3,683	681,301	129,361,790
2025	1,011,082	85,350,795	662,602	107,679,678	0	0	3,683	3,683	681,377	134,260,976
2026	903,906	81,878,504	661,541	102,942,021	0	0	3,683	3,683	681,258	129,519,294
2027	937,155	83,858,560	662,653	105,318,017	0	0	3,683	3,683	681,291	131,896,411
2028	966,589	83,620,795	662,115	105,423,061	0	0	3,683	3,683	681,265	132,000,602
2029	961,432	83,739,680	663,510	105,487,271	0	0	3,683	3,683	681,252	132,064,337
2030	916,588	82,577,339	661,187	103,786,475	0	0	3,683	3,683	681,161	130,360,515
2031	978,405	84,572,124	662,354	106,513,511	0	0	3,683	3,683	681,223	133,089,676
2032	901,357	81,723,786	659,649	102,746,563	0	0	3,683	3,683	681,117	129,319,172
2033	999,025	84,743,613	664,119	106,934,942	0	0	3,683	3,683	681,226	133,511,193
2034	904,902	82,914,495	661,822	103,989,120	0	0	3,683	3,683	681,156	130,562,977
2035	984,419	83,350,257	653,626	105,323,217	0	0	3,683	3,683	681,189	131,898,213
Total	48,192,107	4,250,918,395	33,517,275	5,328,566,779	0	0	197,612	197,612	33,535,262	6,643,160,138

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 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)
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	10,070	0	10,070	47,473	31,446	863,937	942,856	0	0	0
1984	29,957	0	29,957	157,280	77,388	2,040,188	2,274,856	0	0	0
1985	54,709	0	54,709	458,427	582,679	2,696,449	3,737,555	0	0	0
1986	45,886	0	45,886	312,937	365,147	2,595,766	3,273,850	0	0	0
1987	90,385	0	90,385	622,029	674,111	2,306,079	3,602,219	0	0	0
1988	115,970	114,196	230,166	616,865	804,606	2,116,236	3,537,707	0	0	0
1989	64,584	138,240	202,824	407,353	396,069	1,389,347	2,192,769	0	0	0
1990	77,126	138,805	215,931	535,269	514,372	1,490,250	2,539,891	0	0	0
1991	35,178	245,181	280,359	355,578	477,883	1,065,488	1,898,949	0	165,930	165,930
1992	74,573	230,716	305,289	405,244	529,119	1,183,466	2,117,829	0	0	0
1993	89,213	247,977	337,190	841,383	256,930	1,552,562	2,650,875	0	0	0
1994	111,942	229,598	341,540	501,812	559,683	1,395,238	2,456,733	0	0	0
1995	96,842	235,606	332,448	833,226	492,579	796,524	2,122,329	0	0	0
1996	59,556	192,297	251,853	341,022	284,531	1,111,553	1,737,106	672	0	672
1997	52,572	209,313	261,885	494,021	319,301	1,322,033	2,135,355	47,999	324,434	372,433
1998	174,463	284,338	458,801	827,433	644,745	1,268,399	2,740,577	80,530	1,486,486	1,567,016
1999	111,119	163,405	274,524	614,449	498,157	1,335,758	2,448,364	120,515	1,473,845	1,594,360
2000	112,061	155,820	267,881	585,470	439,102	1,272,760	2,297,332	132,423	1,560,869	1,693,292
2001	116,236	154,714	270,950	580,079	434,965	1,260,767	2,275,811	129,747	1,546,161	1,675,908
2002	128,097	164,485	292,582	615,702	461,777	1,338,482	2,415,961	138,467	1,641,467	1,779,934
2003	100,947	147,220	248,167	465,043	424,603	1,010,961	1,900,607	681,423	1,239,807	1,921,230
2004	103,271	146,952	250,223	457,213	417,455	993,941	1,868,609	669,950	1,218,934	1,888,884
2005	116,166	159,206	275,372	495,017	451,972	1,076,125	2,023,114	725,344	1,319,721	2,045,065
2006	117,541	156,784	274,325	487,173	444,810	1,059,071	1,991,054	713,850	1,298,807	2,012,657
2007	119,667	153,654	273,321	477,135	435,645	1,037,249	1,950,029	699,142	1,272,047	1,971,189
2008	146,767	182,695	329,462	566,950	517,651	1,232,500	2,317,101	830,748	1,511,496	2,342,244
2009	149,092	180,098	329,190	558,527	509,961	1,214,190	2,282,678	818,407	1,489,041	2,307,448
2010	151,342	177,566	328,908	550,325	502,470	1,196,357	2,249,152	806,386	1,467,171	2,273,557
2011	154,380	175,176	329,556	542,565	495,385	1,179,489	2,217,439	795,016	1,446,483	2,241,499
2012	156,981	173,327	330,308	536,495	489,842	1,166,293	2,192,630	786,120	1,430,300	2,216,420
2013	73,070	78,184	151,254	241,842	220,813	525,745	988,400	354,371	644,755	999,126
2014	28,087	29,151	57,238	90,116	82,280	195,905	368,301	132,046	240,251	372,297
2015	12,759	12,858	25,617	39,722	36,269	86,352	162,343	58,205	105,900	164,105
2016	8,138	7,983	16,121	24,661	22,517	53,610	100,788	36,136	65,746	101,882
2017	5,427	5,184	10,611	16,018	14,624	34,820	65,462	23,469	42,702	66,171
2018	5,547	5,166	10,713	15,958	14,570	34,692	65,220	23,384	42,544	65,928
2019	5,655	5,136	10,791	15,866	14,486	34,492	64,844	23,249	42,299	65,548
2020	5,790	5,132	10,922	15,854	14,475	34,465	64,794	23,230	42,267	65,497
2021	3,537	3,122	6,659	9,647	8,807	20,970	39,424	14,135	25,716	39,851
2022	3,546	3,130	6,676	9,670	8,829	21,021	39,520	14,170	25,780	39,950
2023	5,784	5,106	10,890	15,774	14,402	34,292	64,468	23,113	42,054	65,167
2024	5,662	4,999	10,661	15,442	14,099	33,569	63,110	22,628	41,168	63,796
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	3,129,695	4,722,520	7,852,215	15,800,065	14,000,555	42,677,391	72,478,011	8,924,875	23,254,181	32,179,056

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	San Joaquin Valley Area							
			Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Municipal and Industrial (13)	Agricultural (14)	County of Kings (15)	Oak Flat Water District (16)	Tulare Lake Basin Water Storage District (17)	Total (18)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	159,191	0	34,366	2,964,185	13,174	9,673	3,733	3,184,322
1984	389,518	0	816,103	9,095,509	26,774	33,576	49,601	10,411,081
1985	527,952	59,324	1,053,957	11,978,046	38,810	42,297	1,253,257	14,953,643
1986	552,171	12,858	885,988	11,788,715	40,659	38,275	872,009	14,190,675
1987	450,941	24,936	1,192,388	10,448,063	39,134	37,538	911,938	13,104,938
1988	425,261	31,146	1,130,988	9,910,050	35,851	26,779	850,225	12,410,300
1989	331,852	17,226	607,908	7,400,983	22,959	24,306	754,007	9,159,241
1990	219,381	7,731	428,482	5,216,562	12,089	12,046	344,943	6,241,234
1991	13,048	3,111	570,942	146,276	0	1,354	30,685	765,416
1992	244,630	13,935	706,155	5,788,599	18,587	15,716	480,903	7,268,525
1993	471,706	25,543	1,202,455	11,405,212	37,276	36,803	1,159,908	14,338,903
1994	262,029	15,161	901,463	6,786,208	19,257	19,061	567,521	8,570,700
1995	626,214	16,830	1,486,494	12,489,555	41,276	36,378	1,051,178	15,747,925
1996	382,731	12,554	958,548	8,684,339	26,883	22,479	1,591,968	11,679,502
1997	477,711	0	879,595	8,217,284	0	23,889	149,581	9,748,060
1998	546,248	4,458	1,133,960	9,942,010	33,004	31,981	760,211	12,451,872
1999	265,576	14,928	661,729	6,000,159	19,905	19,345	589,671	7,571,313
2000	253,051	28,448	630,520	5,717,176	18,966	18,433	561,387	7,227,981
2001	250,666	14,091	624,578	5,663,304	18,787	18,259	556,567	7,146,252
2002	266,118	14,959	663,078	6,012,396	19,945	19,384	590,874	7,586,754
2003	201,000	11,299	485,158	4,569,356	15,064	14,641	446,290	5,742,808
2004	197,615	11,109	476,990	4,492,427	14,811	14,394	438,776	5,646,122
2005	213,955	12,027	516,430	4,863,881	16,036	15,585	475,055	6,112,969
2006	210,565	11,836	508,246	4,786,804	15,782	15,338	467,527	6,016,098
2007	206,226	11,593	497,774	4,688,175	15,456	15,022	457,895	5,892,141
2008	245,047	13,774	591,475	5,570,674	18,365	17,849	544,088	7,001,272
2009	241,406	13,570	582,688	5,487,917	18,093	17,585	536,005	6,897,264
2010	237,860	13,370	574,130	5,407,314	17,828	17,326	528,132	6,795,960
2011	234,506	13,182	566,035	5,331,069	17,576	17,082	520,686	6,700,136
2012	231,883	13,035	559,701	5,271,424	17,379	16,890	514,861	6,625,173
2013	104,529	5,875	252,304	2,376,271	7,835	7,614	232,091	2,986,519
2014	38,950	2,189	94,014	885,452	2,919	2,838	86,482	1,112,844
2015	17,169	965	41,440	390,299	1,287	1,251	38,120	490,531
2016	10,659	599	25,728	242,311	799	776	23,667	304,539
2017	6,923	389	16,710	157,379	519	504	15,371	197,795
2018	6,898	387	16,649	156,800	517	502	15,315	197,068
2019	6,858	386	16,552	155,897	514	499	15,227	195,933
2020	6,853	385	16,539	155,775	513	499	15,215	195,779
2021	4,169	235	10,063	94,781	313	303	9,257	119,121
2022	4,179	235	10,088	95,014	313	304	9,280	119,413
2023	6,818	383	16,456	154,990	511	497	15,138	194,793
2024	6,675	375	16,110	151,728	500	486	14,819	190,693
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	9,556,738	454,437	22,460,977	211,140,369	666,266	665,357	18,549,464	263,493,608

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (19)	Castaic Lake Water Agency (20)	Coachella Valley Water District (21)	Crestline-Lake Arrowhead Water Agency (22)	Desert Water Agency (23)	Littlerock Creek Irrigation District (24)	Mojave Water Agency (25)	Palmdale Water District (26)	San Bernardino Valley Municipal Water District (27)	San Gabriel Valley Municipal Water District (28)
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	1,083,881	411,247	565,798	35,432	894,572	1,250	0	0	233,134	28,548
1984	2,499,848	1,122,640	1,427,428	102,114	2,263,172	77	0	0	502,967	693,074
1985	3,775,658	1,572,025	2,032,672	170,137	3,230,452	0	0	131,200	884,188	601,582
1986	3,159,858	1,694,487	2,097,407	173,460	3,340,188	15,872	0	301,486	739,563	1,088,902
1987	3,167,759	1,694,698	1,991,841	190,149	3,230,424	95,994	1,786	258,719	1,951,799	1,091,691
1988	2,688,113	1,776,471	1,940,156	187,156	3,194,137	30,395	846	126,639	2,000,664	839,774
1989	2,357,669	1,348,806	1,326,863	132,076	2,218,516	50,948	13,206	493,424	1,257,332	792,087
1990	2,528,625	1,335,341	1,463,452	115,746	2,413,745	110,678	0	545,342	1,192,997	1,054,762
1991	1,048,414	531,160	1,022,405	125,256	1,686,304	65,111	473,291	488,207	540,119	796,531
1992	2,760,199	1,548,472	1,124,775	55,985	1,855,065	22,891	1,130,876	367,996	362,232	853,047
1993	3,559,486	1,332,392	2,256,338	29,498	3,721,492	60,615	1,101,799	640,919	425,969	1,406,255
1994	3,963,982	1,450,328	1,345,145	74,879	2,218,411	88,549	1,371,116	678,876	871,358	1,452,741
1995	4,324,008	1,901,361	2,498,461	44,237	4,120,838	43,893	881,146	636,540	75,278	1,397,624
1996	3,356,408	1,413,667	4,382,928	34,165	7,229,059	29,421	508,858	680,978	427,170	1,126,322
1997	3,686,624	1,505,473	4,654,734	45,629	4,682,573	26,311	969,055	702,863	831,197	1,273,885
1998	4,703,588	1,852,646	5,840,856	168,142	5,009,770	167,673	1,273,412	896,685	1,940,100	1,552,080
1999	3,190,830	1,300,415	1,204,841	101,707	1,987,205	100,983	1,031,062	762,882	2,795,649	834,522
2000	3,181,773	1,353,128	1,148,017	96,911	0	96,640	982,435	726,902	2,857,620	795,164
2001	3,281,234	1,464,777	1,137,200	95,998	0	95,729	973,177	720,053	2,988,227	807,363
2002	3,640,799	1,700,029	1,207,299	101,914	1,991,258	101,631	1,033,165	764,437	3,355,348	836,224
2003	2,820,164	1,404,629	911,877	84,872	1,504,005	76,762	780,353	577,383	4,050,156	1,136,886
2004	2,897,374	1,511,367	896,525	91,205	1,478,684	75,469	961,269	567,662	3,981,968	1,117,746
2005	3,277,269	1,769,799	970,654	107,150	1,600,949	81,709	1,250,849	614,599	4,311,215	1,210,166
2006	3,370,431	1,880,927	955,272	112,069	1,575,578	80,415	1,437,796	604,859	4,242,896	1,190,989
2007	3,449,941	1,991,067	935,589	117,860	1,543,115	78,758	1,610,679	592,397	4,155,475	1,166,449
2008	4,283,471	2,365,863	1,111,704	149,671	1,833,590	93,583	2,154,501	703,909	4,937,698	1,386,020
2009	4,409,232	2,330,718	1,095,188	156,930	1,806,350	92,193	2,359,548	693,452	4,864,345	1,365,430
2010	4,540,961	2,296,484	1,079,104	156,493	1,779,819	90,839	2,558,464	683,267	4,792,900	1,345,375
2011	4,678,438	2,264,104	1,063,887	163,038	1,754,723	89,558	2,752,668	673,633	4,725,319	1,326,405
2012	4,834,201	2,238,772	1,051,984	169,866	1,735,091	88,556	2,949,573	666,096	4,672,450	1,311,565
2013	2,277,154	1,009,202	474,217	80,473	782,151	39,919	1,432,263	300,265	2,106,264	591,232
2014	886,677	376,051	176,704	31,439	291,447	14,875	578,061	111,886	784,841	220,306
2015	394,545	165,760	77,889	14,499	128,467	6,557	254,803	49,318	345,951	97,109
2016	244,947	102,909	48,357	9,294	79,757	4,070	158,191	30,619	214,778	60,288
2017	159,091	66,839	31,407	6,227	51,802	2,644	102,743	19,887	139,496	39,157
2018	158,505	66,593	31,292	6,394	51,610	2,634	102,366	19,813	138,984	39,012
2019	157,592	66,209	31,111	6,546	51,313	2,619	101,776	19,699	138,183	38,788
2020	157,469	66,158	31,087	6,728	51,274	2,617	101,696	19,684	138,074	38,758
2021	95,812	40,253	18,915	4,168	31,197	1,592	61,877	11,976	84,011	23,582
2022	96,047	40,352	18,962	4,252	31,273	1,596	62,029	12,006	84,217	23,640
2023	156,676	65,825	30,930	7,056	51,016	2,603	101,185	19,584	137,379	38,563
2024	153,379	64,439	30,279	7,026	49,942	2,549	99,054	19,173	134,487	37,751
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	105,458,132	50,493,883	51,741,550	3,573,847	73,550,334	2,136,778	33,716,974	16,935,315	75,413,998	33,127,395

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				
	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)	Total State Water Project (a (37)
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0
1983	0	12,791,358	0	16,045,220	0	0	0	0	20,182,468
1984	0	39,229,567	0	47,840,887	0	0	0	0	60,556,781
1985	0	77,446,522	0	89,844,436	0	0	0	0	108,590,343
1986	0	77,581,287	0	90,192,510	0	0	0	0	107,702,921
1987	0	68,939,195	0	82,614,055	0	0	0	0	99,411,597
1988	0	79,936,309	0	92,720,660	0	0	0	0	108,898,833
1989	0	68,311,546	0	78,302,473	0	0	0	0	89,857,307
1990	0	83,964,409	277,885	95,002,982	0	0	0	0	104,000,038
1991	0	54,214,229	132,209	61,123,236	0	0	0	0	64,233,890
1992	0	72,401,054	0	82,482,592	0	0	0	0	92,174,235
1993	0	55,312,617	0	69,847,380	0	0	0	0	87,174,348
1994	0	72,838,621	0	86,354,006	0	0	0	0	97,722,979
1995	0	40,862,810	0	56,786,196	0	0	0	0	74,988,898
1996	0	33,993,131	0	53,182,107	0	0	0	0	66,851,240
1997	0	39,980,823	0	58,359,167	0	0	0	0	70,876,900
1998	0	54,215,445	782,087	78,402,484	0	0	0	0	95,620,750
1999	62,589	69,991,103	473,076	83,836,864	0	0	0	0	95,725,425
2000	178,912	71,999,080	450,765	83,867,347	0	0	0	0	95,353,833
2001	236,301	71,366,417	446,517	83,612,993	0	0	0	0	94,981,914
2002	271,773	67,401,453	474,041	82,879,371	0	0	0	0	94,954,602
2003	205,271	58,919,879	716,090	73,188,327	0	0	0	0	83,001,139
2004	252,268	58,848,487	704,034	73,384,058	0	0	0	0	83,037,896
2005	294,137	64,711,033	762,247	80,961,776	0	0	0	0	91,418,296
2006	310,153	64,666,459	750,168	81,178,012	0	0	0	0	91,472,146
2007	700,679	64,294,746	734,711	81,371,466	0	0	0	0	91,458,146
2008	832,575	77,539,047	873,012	98,264,644	0	0	0	0	110,254,723
2009	820,206	77,511,707	860,043	98,365,342	0	0	0	0	110,181,922
2010	808,160	77,481,301	847,411	98,460,578	0	0	0	0	110,108,155
2011	796,765	77,481,227	835,463	98,605,228	0	0	0	0	110,093,858
2012	787,850	77,694,546	826,115	99,026,665	0	0	0	0	110,391,196
2013	355,149	35,510,355	372,399	45,331,043	0	0	0	0	50,456,342
2014	132,337	13,413,403	138,764	17,156,791	0	0	0	0	19,067,471
2015	58,333	5,992,478	61,166	7,646,875	0	0	0	0	8,489,471
2016	36,215	3,769,991	37,974	4,797,390	0	0	0	0	5,320,720
2017	23,522	2,480,827	24,664	3,148,306	0	0	0	0	3,488,345
2018	23,435	2,503,831	24,573	3,169,042	0	0	0	0	3,507,971
2019	23,299	2,521,351	24,431	3,182,917	0	0	0	0	3,520,033
2020	23,282	2,551,302	24,412	3,212,541	0	0	0	0	3,549,533
2021	14,166	1,562,700	14,854	1,965,103	0	0	0	0	2,170,158
2022	14,201	1,566,540	14,890	1,970,005	0	0	0	0	2,175,564
2023	23,164	2,555,415	24,289	3,213,685	0	0	0	0	3,549,003
2024	22,677	2,501,630	23,778	3,146,164	0	0	0	0	3,474,424
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	7,307,419	1,988,855,231	11,732,068	2,454,042,924	0	0	0	0	2,830,045,814

a) Costs allocated to contractors in 1989 through 1993 are reduced by credits for Off-Aqueduct Power Facility costs allocated to the pumping of non-SWP water.

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

Calendar Year	North Bay Aqueduct						South Bay Aqueduct		California Aqueduct	
	Reach 1		Reach 3A		Reach 3B		Reach 1		Reach 1	
	Barker Slough Pumping Plant		Cordelia Pumping Plant Solano County Water Agency		Cordelia Pumping Plant Napa County FC&WCD (a		South Bay and Del Valle Pumping Plants (b		Banks Pumping Plant	
	Unit Rate (1)	Cumulative Unit Rate (2)	Unit Rate (3)	Cumulative Unit Rate (4)	Unit Rate (5)	Cumulative Unit Rate (6)	Unit Rate (7)	Cumulative Unit Rate (8)	Unit Rate (9)	Cumulative Unit Rate (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	4.1511341	4.1511341	0	0
1963	0	0	0	0	0	0	4.5639383	4.5639383	0	0
1964	0	0	0	0	0	0	3.5452154	3.5452154	0	0
1965	0	0	0	0	0	0	4.1911773	4.1911773	0	0
1966	0	0	0	0	0	0	3.5074573	3.5074573	0	0
1967	0	0	0	0	0	0	3.9306767	4.1752198	0.2445431	0.2445431
1968	0	0	0	0	5.7570016	5.7570016	3.3315620	4.8750942	1.5435322	1.5435322
1969	0	0	0	0	3.1823595	3.1823595	3.6949019	4.8016170	1.1067151	1.1067151
1970	0	0	0	0	3.7584301	3.7584301	4.4256141	5.3721490	0.9465349	0.9465349
1971	0	0	0	0	4.2082507	4.2082507	3.8714396	4.7522833	0.8808437	0.8808437
1972	0	0	0	0	3.9577735	3.9577735	4.3250690	5.2281686	0.9030996	0.9030996
1973	0	0	0	0	3.8103903	3.8103903	5.2455409	6.1841800	0.9386391	0.9386391
1974	0	0	0	0	3.5878850	3.5878850	6.3321503	7.2293909	0.8972406	0.8972406
1975	0	0	0	0	2.1606725	2.1606725	3.7365711	4.8327731	1.0962020	1.0962020
1976	0	0	0	0	2.9283909	2.9283909	4.5191527	5.7132795	1.1941268	1.1941268
1977	0	0	0	0	2.7516411	2.7516411	4.7630172	6.5309908	1.7679736	1.7679736
1978	0	0	0	0	3.5949619	3.5949619	5.2086183	6.8245097	1.6158914	1.6158914
1979	0	0	0	0	2.4747752	2.4747752	4.9524184	7.0939033	2.1414849	2.1414849
1980	0	0	0	0	2.9737588	2.9737588	4.5186576	5.8912773	1.3726197	1.3726197
1981	0	0	0	0	2.6487057	2.6487057	4.3834851	6.4772202	2.0937351	2.0937351
1982	0	0	0	0	10.0239077	10.0239077	4.9779475	6.7284782	1.7505307	1.7505307
1983	0	0	0	0	1.0209882	1.0209882	1.3127535	2.1162150	0.8034615	0.8034615
1984	0	0	0	0	1.6647280	1.6647280	2.7931657	3.9861839	1.1930182	1.1930182
1985	0	0	0	0	2.5219114	2.5219114	3.6942124	5.3146305	1.6204181	1.6204181
1986	0	0	0	0	4.3967036	4.3967036	7.4448499	10.7240598	3.2792099	3.2792099
1987	0	0	0	0	3.5385415	3.5385415	6.5485394	9.4938652	2.9453258	2.9453258
1988	1.1849573	1.1849573	0.9769370	2.1618943	4.4701409	5.6550982	6.2049981	8.9048811	2.6998830	2.6998830
1989	1.1263059	1.1263059	2.6374232	3.7637291	1.0635997	2.1899056	7.6128953	11.0630833	3.4501880	3.4501880
1990	2.2510452	2.2510452	4.3186176	6.5696628	6.2080692	8.4591144	11.8868255	16.0951387	4.2083132	4.2083132
1991	1.3320163	1.3320163	2.6243839	3.9564002	4.2572464	5.5892627	7.5405400	11.2389233	3.6983833	3.6983833
1992	0.7148716	0.7148716	1.4281996	2.1430712	2.3686578	3.0835294	4.1030120	6.4071722	2.3041602	2.3041602
1993	-0.3401903	-0.3401903	-0.6012024	-0.9413927	-1.0145668	-1.3547571	-1.4972587	-1.2389877	0.2582710	0.2582710
1994	1.4517599	1.4517599	2.6410514	4.0928113	4.2585395	5.7102994	7.8995108	11.1996035	3.3000927	3.3000927
1995	0.7402646	0.7402646	1.2730133	2.0132779	2.2327287	2.9729933	3.2028314	5.1574013	1.9545699	1.9545699
1996	1.6280887	1.6280887	2.7387662	4.3668549	4.7445330	6.3726217	7.9953977	11.2530747	3.2576770	3.2576770
1997	1.5983877	1.5983877	2.8158962	4.4142839	4.5344391	6.1328268	8.8486094	12.1852303	3.3366209	3.3366209
1998	2.3657123	2.3657123	4.1599420	6.5256543	6.2372331	8.6029454	6.9653722	10.5178628	3.5524906	3.5524906
1999	2.8552621	2.8552621	5.9206973	8.7759594	8.7699108	11.6251729	14.5353296	19.7189434	5.1836138	5.1836138
2000	3.0545903	3.0545903	6.2226313	9.2772216	9.3460536	12.4006439	15.8670249	21.4092120	5.5421871	5.5421871
2001	2.3151127	2.3151127	4.9474047	7.2625174	7.8068789	10.1219916	13.0502244	17.7841484	4.7339240	4.7339240
2002	2.7580565	2.7580565	5.2541598	8.0122163	7.9038421	10.6618986	13.1819723	17.9728233	4.7908510	4.7908510
2003	2.8964516	2.8964516	5.6197970	8.5162486	7.9948649	10.8913165	13.3463085	18.4364030	5.0900945	5.0900945
2004	3.3289182	3.3289182	6.4881592	9.8170774	9.1570130	12.4859312	15.2739096	21.0346681	5.7607585	5.7607585
2005	2.6959304	2.6959304	5.2413433	7.9372737	7.4029375	10.0988679	12.3387553	17.0799952	4.7412399	4.7412399
2006	2.6590000	2.6590000	5.1636318	7.8226318	7.2940426	9.9530426	12.1558404	16.8345801	4.6787397	4.6787397
2007	2.7673595	2.7673595	5.3589055	8.1262650	7.5822222	10.3495817	12.6156223	17.4636306	4.8480083	4.8480083
2008	2.8731029	2.8731029	5.5510945	8.4241974	7.8602833	10.7333862	13.0679734	18.0606056	4.9926322	4.9926322
2009	2.7414357	2.7414357	5.2839801	8.0254158	7.4955495	10.2369852	12.4391277	17.2154281	4.7763004	4.7763004
2010	2.8958678	2.8958678	5.5714428	8.4673106	7.9281600	10.8240278	13.1159628	18.1255923	5.0096295	5.0096295
2011	2.9121732	2.9121732	5.5846269	8.4968001	7.9720619	10.8842351	13.1468830	18.1675795	5.0206965	5.0206965
2012	2.9572006	2.9572006	5.6602488	8.6174494	8.1054135	11.0626141	13.3248989	18.4069288	5.0820299	5.0820299
2013	3.1601440	3.1601440	6.0308458	9.1909898	8.6633010	11.8234450	14.1973617	19.5817070	5.3843453	5.3843453
2014	3.5099209	3.5099209	6.6813433	10.1912642	9.6415059	13.1514268	15.7287287	21.6434471	5.9147184	5.9147184
2015	3.5421127	3.5421127	6.7248259	10.2669386	9.7405936	13.2827063	15.8311330	21.7813632	5.9502302	5.9502302
2016	3.5540620	3.5540620	6.7294527	10.2835147	9.7884889	13.3425509	15.8419947	21.7957314	5.9537367	5.9537367
2017	3.5893548	3.5893548	6.7817413	10.3710961	9.9087879	13.4981427	15.9651011	21.9617863	5.9966852	5.9966852
2018	3.6150533	3.6150533	6.8138308	10.4288841	10.0152321	13.6302854	16.0406223	22.0629359	6.0223136	6.0223136
2019	3.6234087	3.6234087	6.8145274	10.4379361	10.0791358	13.7025445	16.0423191	22.0654264	6.0231073	6.0231073
2020	3.5654559	3.5654559	6.6900000	10.2554559	9.9610040	13.5264599	15.7491223	21.6708474	5.9217251	5.9217251
2021	3.5548507	3.5548507	6.6667164	10.2215671	9.9350000	13.4898507	15.6942394	21.5970465	5.9028071	5.9028071
2022	3.6039851	3.6039851	6.7588557	10.3628408	10.0723600	13.6763451	15.9112021	21.8883869	5.9771848	5.9771848
2023	3.5947463	3.5947463	6.7414925	10.3362388	10.0465200	13.6412663	15.8703830	21.8337022	5.9633192	5.9633192
2024	3.5629851	3.5629851	6.6819900	10.2449751	9.9577600	13.5207451	15.7302021	21.6452494	5.9150473	5.9150473
2025	3.6008507	3.6008507	6.7529851	10.3538358	10.0636400	13.6644907	15.8974202	21.8701831	5.9727629	5.9727629
2026	3.5405970	3.5405970	6.6400000	10.1805970	9.8952400	13.4358370	15.6314202	21.5126434	5.8812232	5.8812232
2027	3.5576119	3.5576119	6.6718905	10.2295024	9.9427200	13.5003319	15.7064628	21.6131173	5.9066545	5.9066545
2028	3.5449254	3.5449254	6.6481095	10.1930349	9.9072800	13.4522054	15.6504787	21.5373778	5.8868991	5.8868991
2029	3.5377164	3.5377164	6.6345771	10.1722935	9.8871600	13.4248764	15.6186277	21.4947545	5.8761268	5.8761268
2030	3.4923284	3.4923284	6.5494030	10.0417314	9.7602800	13.2526084	15.4182340	21.2251233	5.8068893	5.8068893
2031	3.5242836	3.5242836	6.6094527	10.1337363	9.8496400	13.3739236	15.5593777	21.4148166	5.8554389	5.8554389
2032	3.4710299	3.4710299	6.5094527	9.9804826	9.7007200	13.1717499	15.3242074	21.0990963	5.7748889	5.7748889
2033	3.5255075	3.5255075	6.6116915	10.1371990	9.8530400	13.3785475	15.5647713	21.4220879	5.8573166	5.8573166
2034	3.4897015	3.4897015	6.5444776	10.0341791	9.7529200	13.2426215	15.4066436	21.2097435	5.8030999	5.8030999
2035	3.5068209	3.5068209	6.5766169	10.0834378	9.8008000	13.3076209	15.4822234	21.3110888	5.8288654	5.8288654

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	1.0808850	2.5502604	1.1418280	3.6920884	2.2892599	5.9813483	7.3206022	13.3019505
1973	0.5996892	1.5383283	0.9844807	2.5228090	1.2143719	3.7371809	2.1051633	5.8423442	7.4512435	13.2935877
1974	0.5736894	1.4709300	0.9223291	2.3932591	1.0924098	3.4856689	1.9449022	5.4305711	6.9004732	12.3310443
1975	0.4606980	1.5569000	0.8190849	2.3759849	0.9574493	3.3334342	1.9610412	5.2944754	6.9962702	12.2907456
1976	0.5163827	1.7105095	0.9626676	2.6731771	1.0211874	3.6943645	2.2275746	5.9219391	7.9384515	13.8603906
1977	0.6138931	2.3818667	1.0969170	3.4787837	1.3715867	4.8503704	2.9301764	7.7805468	9.9990004	17.7795472
1978	0.4565571	2.0724485	0.9611334	3.0335819	1.0432294	4.0768113	1.9992416	6.0760529	7.1214594	13.1975123
1979	0.6610254	2.8025103	1.1106296	3.9131399	1.2652451	5.1783850	2.7182205	7.8966055	9.6805897	17.5771952
1980	0.8077480	2.1803677	1.3528421	3.5332098	1.5041463	5.0373561	3.2166969	8.2540530	11.0321707	19.2862237
1981	1.0909294	3.1846645	1.2388784	4.4235429	1.3195560	5.7430989	2.9541028	8.6972017	9.9484860	18.6456877
1982	0.8307526	2.5812833	1.2001820	3.7814653	1.3668611	5.1483264	2.8880977	8.0364241	10.1769284	18.2133525
1983	0.3789496	1.1824111	0.7434250	1.9258361	0.8851706	2.8110067	1.7730111	4.5840178	5.5794328	10.1634506
1984	0.6622140	1.8552322	1.0606757	2.9159079	1.2272792	4.1431871	2.5603259	6.7035130	8.3017115	15.0052245
1985	0.8734833	2.4939014	1.4204810	3.9143824	1.6516280	5.5660104	3.4695771	9.0355875	11.8181222	20.8537097
1986	1.3962501	4.6754600	2.3763988	7.0518588	2.7626510	9.8145098	5.9668234	15.7813332	20.6491088	36.4304420
1987	1.2912654	4.2365912	2.2344504	6.4710416	2.5459820	9.0170236	5.3140784	14.3311020	17.7627055	32.0938075
1988	1.1990538	3.8989368	2.1211835	6.0201203	2.4110380	8.4311583	5.0273093	13.4584676	16.6781984	30.1366660
1989	1.5234695	4.9736575	2.7054583	7.6791158	3.0205179	10.6996337	6.5778425	17.2774762	22.2785524	39.5560286
1990	1.8947494	6.1030626	3.3054275	9.4084901	3.7453477	13.1538378	8.6764188	21.8302566	31.0160447	52.8463013
1991	1.0496191	4.7480024	2.1130928	6.8610952	2.4152860	9.2763812	5.6819217	14.9583029	20.4728762	35.4311791
1992	0.8904306	3.1945908	1.4579607	4.6525515	1.6750151	6.3275666	3.4652836	9.7928502	11.7499777	21.5428279
1993	0.1741447	0.4324157	-0.0797324	0.3526833	-0.0569022	0.2957811	-0.6004609	-0.3046798	-2.9285687	-3.2332485
1994	1.4306291	4.7307218	2.4978367	7.2285585	2.7840280	10.0125865	6.0336401	16.0462266	21.3409980	37.3872246
1995	0.7635812	2.7181511	1.2022775	3.9204286	1.3184130	5.2388416	2.6999349	7.9387765	9.1804467	17.1192232
1996	1.6325696	4.8902466	2.5274257	7.4176723	2.7456010	10.1632733	6.1266237	16.2898970	22.0465464	38.3364434
1997	1.2067422	4.5433631	2.3203032	6.8636663	2.4938971	9.3575634	5.8301921	15.1877555	21.3837218	36.5714773
1998	1.4418697	4.9943603	2.4106112	7.4049715	2.9036944	10.3086659	6.2579616	16.5666275	22.2707794	38.8374069
1999	2.1704533	7.3540671	3.7019142	11.0559813	4.4686873	15.5246686	9.6558752	25.1805438	34.4100567	59.5906005
2000	2.3361098	7.8782969	4.0047438	11.8830407	4.8447395	16.7277802	10.4663024	27.1940826	37.3033425	64.4974251
2001	1.9398210	6.6737450	3.3483800	10.0221250	4.0517478	14.0738728	8.7585096	22.8323824	31.2268365	54.0592189
2002	1.9620356	6.7528866	3.3879045	10.1407911	4.1002134	14.2410045	8.8637190	23.1047235	31.6029051	54.7076286
2003	2.1112306	7.2013251	3.7703586	10.9716837	4.5978710	15.5695547	9.9619608	25.5315155	35.5695671	61.1010826
2004	2.4168410	8.1775995	4.3174827	12.4950822	5.2653477	17.7604299	11.4082532	29.1686831	40.7340485	69.9027316
2005	1.9525154	6.6937553	3.4864679	10.1802232	4.2517579	14.4319811	9.2120549	23.6440360	32.8920841	56.5361201
2006	1.9233764	6.6021161	3.4347605	10.0368766	4.1886960	14.2255726	9.0754710	23.3010436	32.4044219	55.7054655
2007	2.0014844	6.8494927	3.5786003	10.4280930	4.3652859	14.7933789	9.4588163	24.2521952	33.7749373	58.0271325
2008	2.0676742	7.0603064	3.6917152	10.7520216	4.5019709	15.2539925	9.7541634	25.0081559	34.8276587	59.8358146
2009	1.9679676	6.7442680	3.5140446	10.2583126	4.2853288	14.5436414	9.2847781	23.8284195	33.1516871	56.9801066
2010	2.0752895	7.0849190	3.7052539	10.7901729	4.5185155	15.3086884	9.7899665	25.0986549	34.9554925	60.0541474
2011	2.0802321	7.1009286	3.7139826	10.8149112	4.5291504	15.3440616	9.8130704	25.1571320	35.0379467	60.1950787
2012	2.1086100	7.1906399	3.7642698	10.9549097	4.5904873	15.5453970	9.9459177	25.4913147	35.5123606	61.0036753
2013	2.2466305	7.6309758	4.0107289	11.6417047	4.8910402	16.5327449	10.5971764	27.1299213	37.8376137	64.9675350
2014	2.4891447	8.4038631	4.4433525	12.8472156	5.4186185	18.2658341	11.7401905	30.0060246	41.9188977	71.9249223
2015	2.5052917	8.4555219	4.4722622	12.9277841	5.4538753	18.3816594	11.8166068	30.1982662	42.1917302	72.3899964
2016	2.5070985	8.4608352	4.4753433	12.9361785	5.4576281	18.3938066	11.8247192	30.2185258	42.2206933	72.4392191
2017	2.5266013	8.5232865	4.5101099	13.0333964	5.5000388	18.5334352	11.9166284	30.4500636	42.5488021	72.9988657
2018	2.5386866	8.5610002	4.5314415	13.0924417	5.5260654	18.6185071	11.9729828	30.5914899	42.7500156	73.3415055
2019	2.5389601	8.5620674	4.5319183	13.0939857	5.5266121	18.6205978	11.9742379	30.5948357	42.7545104	73.3493461
2020	2.4925715	8.4142966	4.4490918	12.8633884	5.4256376	18.2890260	11.7553918	30.0444178	41.9732088	72.0176266
2021	2.4837059	8.3865130	4.4335949	12.8201079	5.4067182	18.2268261	11.7144453	29.9412714	41.8268752	71.7681466
2022	2.5182663	8.4954511	4.4948718	12.9903229	5.4814485	18.4717714	11.8763646	30.3481360	42.4050947	72.7532307
2023	2.5119238	8.4752430	4.4833433	12.9585863	5.4673906	18.4259769	11.8458920	30.2718689	42.2963230	72.5681919
2024	2.4894565	8.4045038	4.4437408	12.8482446	5.4191019	18.2673465	11.7412562	30.0086027	41.9227047	71.9313074
2025	2.5160604	8.4888233	4.4909641	12.9797874	5.4767291	18.4565165	11.8660830	30.3225995	42.3683902	72.6909897
2026	2.4738478	8.3550710	4.4158344	12.7709054	5.3850693	18.1559747	11.6675296	29.8235043	41.6594284	71.4829327
2027	2.4858973	8.3925518	4.4370373	12.8295891	5.4109441	18.2405332	11.7235600	29.9640932	41.8594288	71.8235220
2028	2.4770108	8.3639099	4.4211971	12.7851070	5.3916405	18.1767475	11.6817579	29.8585054	41.7102201	71.5687255
2029	2.4720271	8.3481539	4.4122186	12.7603725	5.3806755	18.1410480	11.6579796	29.7990276	41.6253865	71.4244141
2030	2.4401968	8.2470861	4.3556077	12.6026938	5.3116242	17.9143180	11.5083934	29.4227114	41.0912725	70.5139839
2031	2.4626355	8.3180744	4.3954646	12.7135390	5.3602760	18.0738150	11.6137700	29.6875850	41.4674958	71.1550808
2032	2.4252094	8.2000983	4.3290585	12.5291568	5.2792445	17.8084013	11.4382437	29.2466450	40.8407193	70.0873643
2033	2.4636154	8.3209320	4.3970135	12.7179455	5.3621169	18.0800624	11.6177826	29.6978450	41.4818355	71.1796805
2034	2.4383335	8.2414334	4.3523527	12.5937861	5.3076377	17.9014238	11.4997642	29.4011880	41.0604584	70.4616464
2035	2.4503167	8.2791821	4.3736984	12.6528805	5.3336824	17.9865629	11.5561844	29.5427473	41.2618432	70.8045905

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 Powerplant		Pearblossom Pumping Plant		Mojave Siphon Powerplant		Devil Canyon Powerplant		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	13.3019505	14.2519509	27.5539014	0	27.5539014	-2.3717647	25.1821367	1.4212193	14.7231698
1973	0	13.2935877	4.4326545	17.7262422	0	17.7262422	-8.4298618	9.2963804	1.0210537	14.3146414
1974	0	12.3310443	3.4431782	15.7742225	0	15.7742225	-5.1043660	10.6698565	0.9241725	13.2552168
1975	0	12.2907456	3.1739313	15.4646769	0	15.4646769	-5.6510611	9.8136158	0.9362286	13.2269742
1976	0	13.8603906	3.9391330	17.7995236	0	17.7995236	-6.4449941	11.3545295	0.8622774	14.7226680
1977	0	17.7795472	3.4988957	21.2784429	0	21.2784429	-11.6274558	9.6509871	0.9076172	18.6871644
1978	0	13.1975123	4.1619043	17.3594166	0	17.3594166	-8.1314274	9.2279892	0.7314697	13.9289820
1979	0	17.5771952	5.2196408	22.7968360	0	22.7968360	-9.5825772	13.2142588	0.9504526	18.5276478
1980	0	19.2862237	4.4162940	23.7025177	0	23.7025177	-8.3797007	15.3228170	1.4269064	20.7131301
1981	0	18.6456877	3.9979411	22.6436288	0	22.6436288	-6.7421980	15.9014308	1.5649076	20.2105953
1982	0	18.2133525	3.6618080	21.8751605	0	21.8751605	-6.9205064	14.9546541	1.4942612	19.7076137
1983	0	10.1634506	1.7398697	11.9033203	0	11.9033203	-23.7901875	-11.8868672	1.4582832	11.6217338
1984	0	15.0052245	2.4963740	17.5015985	0	17.5015985	-29.2940487	-11.7924502	1.7879684	16.7931929
1985	0	20.8537097	3.4967556	24.3504653	0	24.3504653	-30.7672356	-6.4167703	2.1683888	23.0220985
1986	-2.3583180	34.0721240	6.0001395	40.0722635	0	40.0722635	-29.2499580	10.8223055	3.2342581	39.6647001
1987	-2.5482255	29.5455820	5.0534632	34.5990452	0	34.5990452	-29.7006533	4.8983919	3.1272921	35.2210996
1988	-1.3847067	28.7519593	4.7610493	33.5130086	0	33.5130086	-29.0334518	4.4795568	2.9971055	33.1337715
1989	-1.1019487	38.4540799	6.4423849	44.8964648	0	44.8964648	-28.3706997	16.5257651	3.5381171	43.0941457
1990	-1.0673268	51.7789745	8.9810187	60.7599932	0	60.7599932	-28.8797266	31.8802666	3.6781647	56.5244660
1991	-1.5208846	33.9102945	6.0787491	39.9890436	0	39.9890436	-30.3294687	9.6595749	2.1849463	37.6161254
1992	-2.6366353	18.9061926	3.6820064	22.5881990	0	22.5881990	-30.0926575	-7.5044585	1.8167497	23.3595776
1993	-0.1885524	-3.4218009	-1.0123826	-4.4341835	0	-4.4341835	-30.6629489	-35.0971324	0.2762690	-2.9569795
1994	-0.1278266	37.2593980	6.4124432	43.6718412	0	43.6718412	-30.4781656	13.1936756	3.0409092	40.4281338
1995	-3.4425314	13.6766918	3.3131032	16.9897950	0	16.9897950	-30.3517624	-13.3619674	1.2709971	18.3902203
1996	-6.0056507	32.3307927	6.5515967	38.8823894	-2.3734530	36.5089364	-29.1501140	7.3588224	3.0925164	41.4289598
1997	-4.7177720	31.8537053	6.2952971	38.1490024	-3.8344969	34.3145055	-30.4612039	3.8533016	2.6091578	39.1806351
1998	-3.4743083	35.3630986	6.1200479	41.4831465	-4.9564083	36.5267382	-21.0874295	15.4393087	3.2159830	42.0533899
1999	-3.8185189	55.7720816	9.8895973	65.6616789	-5.7606590	59.9010199	-24.5832694	35.3177505	4.7654200	64.3560205
2000	-3.9850895	60.5123356	10.8243656	71.3367012	-5.8440319	65.4926693	-25.0640090	40.4286603	5.1041423	69.6015674
2001	-3.8268316	50.2323873	9.1042738	59.3366611	-4.9722673	54.3643938	-24.1219769	30.2424169	4.2694310	58.3286499
2002	-3.7333808	50.9742478	9.0615952	60.0358430	-5.0392736	54.9965694	-23.9095331	31.0870363	4.3166020	59.0242306
2003	-4.4031116	56.6979710	10.9655271	67.6634981	-5.7648131	61.8986850	-28.9204539	32.9782311	4.3646079	65.4656905
2004	-4.4056913	65.4970403	12.5671394	78.0641797	-5.7649336	72.2992461	-28.9112398	43.3880063	4.9949925	74.8977241
2005	-4.4363004	52.0998197	10.1428644	62.2426841	-5.9307032	56.3119809	-28.8088347	27.5031462	4.0351617	60.5712818
2006	-4.3950273	51.3104382	9.9924256	61.3028638	-6.0159216	55.2869422	-28.7400917	26.5468505	3.9753111	59.6807766
2007	-4.4442409	53.5828916	10.4662219	64.0491135	-5.9263096	58.1228039	-29.0324449	29.0903590	4.1256828	62.1528153
2008	-4.4007775	55.4350371	10.7368550	66.1718921	-5.8676508	60.3042413	-28.7903176	31.5139237	4.2736170	64.1094316
2009	-4.3797092	52.6003974	10.2201730	62.8205704	-5.7955123	57.0250581	-28.8266457	28.1984124	4.0679750	61.0480816
2010	-4.3918458	55.6623016	10.7762534	66.4385550	-6.1362916	60.3022634	-28.6813663	31.6208971	4.2893062	64.3434536
2011	-4.3810760	55.8140027	10.8016863	66.6156890	-5.8758649	60.7398241	-28.8288375	31.9109866	4.2994425	64.4945212
2012	-4.3752554	56.6284199	10.9479198	67.5763397	-6.0590845	61.5172552	-28.7055250	32.8117302	4.3576844	65.3613597
2013	-4.3171717	60.6503633	11.6647659	72.3151292	-5.9888101	66.3263191	-28.7244172	37.6019019	4.6429790	69.6105140
2014	-4.3538828	67.5710395	12.9229575	80.4939970	-6.1850119	74.3089851	-28.6499502	45.6590349	5.1438073	77.0687296
2015	-4.3926417	67.9973547	13.0070685	81.0044232	-6.1015888	74.9028344	-28.6629032	46.2399312	5.1772779	77.5672743
2016	-4.3491191	68.0901000	13.0160087	81.1061087	-5.9529202	75.1531885	-28.7171396	46.4360489	5.1808215	77.6200406
2017	-4.3727655	68.6261002	13.1171871	81.7432873	-6.1998207	75.5434666	-28.6382842	46.9051824	5.2210830	78.2199487
2018	-4.3215308	69.0199747	13.1791602	82.1991349	-6.1272933	76.0718416	-28.6518558	47.4199858	5.2457822	78.5872877
2019	-4.3470864	69.0022597	13.1805935	82.1828532	-6.0976787	76.0851745	-28.6451759	47.4399986	5.2463221	78.5956682
2020	-4.3464364	67.6711902	12.9397158	80.6109060	-5.8802647	74.7306413	-28.5314692	46.1991721	5.1504468	77.1680734
2021	-4.3113263	67.4568203	12.8945917	80.3514120	-5.8009297	74.5504823	-28.5216826	46.0287997	5.1325051	76.9006517
2022	-4.3103880	68.4428427	13.0728766	81.5157193	-5.9823881	75.5333312	-28.4601224	47.0732088	5.2034261	77.9566568
2023	-4.3594496	68.2087423	13.0393449	81.2480872	-5.8687884	75.3792988	-28.5213710	46.8579278	5.1901202	77.7583121
2024	-4.3359896	67.5953178	12.9241381	80.5194559	-5.6952116	74.8242443	-28.5834512	46.2407931	5.1442452	77.0755526
2025	-4.3224214	68.3685683	13.0615398	81.4301081	-5.8240021	75.6061060	-28.5532661	47.0528399	5.1989180	77.8899077
2026	-4.3170769	67.1658558	12.8429776	80.0088334	-5.6412585	74.3675749	-28.5830336	45.7845413	5.1119655	76.5948982
2027	-4.3211270	67.5023950	12.9046562	80.4070512	-5.8694941	74.5375571	-28.5271986	46.0103585	5.1365302	76.9600522
2028	-4.3531826	67.2155429	12.8586419	80.0741848	-6.0872634	73.9869214	-28.4243423	45.5625791	5.1181782	76.6869037
2029	-4.3707113	67.0537028	12.8325587	79.8862615	-6.0180540	73.8682075	-28.4552486	45.4129589	5.1077654	76.5321795
2030	-4.3664655	66.1475184	12.6678553	78.8153737	-5.9333217	72.8820520	-28.4957113	44.3863407	5.0422458	75.5562297
2031	-4.3272669	66.8278139	12.7838134	79.6116273	-5.9151897	73.6964376	-28.5123894	45.1840482	5.0884109	76.2434917
2032	-4.3368996	65.7504647	12.5905943	78.3410590	-5.8750271	72.4660319	-28.5028303	43.9632016	5.0114846	75.0988489
2033	-4.3694151	66.8102654	12.7882888	79.5985542	-5.8970253	73.7015289	-28.5120535	45.1894754	5.0901443	76.2698248
2034	-4.3628956	66.0987508	12.6583558	78.7571066	-5.7959179	72.9611887	-28.5634188	44.3977699	5.0384712	75.5001176
2035	-4.3415924	66.4629981	12.7204387	79.1834368	-6.0648953	73.1185415	-28.4422858	44.6762557	5.0631568	75.8677473

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

	California Aqueduct (continued)							
	Reach 29G		Reach 29J		Reach 31A		Reach 33A	
	Warne Powerplant		Castaic Powerplant		Las Perillas and Badger Hill Pumping Plants		Devil's Den, Bluestone, and Polonio Pass Pumping Plants and San Luis Obispo Powerplant	
Calendar Year	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	1.2624065	3.0719381	0	0
1970	0	0	0	0	1.6309699	3.3588478	0	0
1971	0	0	0	0	1.4985537	2.7919286	0	0
1972	0	14.7231698	-2.9350830	11.7880868	1.9517720	3.4211474	0	0
1973	0	14.3146414	-6.8099448	7.5046966	1.5374531	3.0757814	0	0
1974	0	13.2552168	-7.4013274	5.8538894	1.5168982	2.9878282	0	0
1975	0	13.2269742	-6.5604921	6.6664821	1.1130304	2.6699304	0	0
1976	0	14.7226680	-6.7213324	8.0013356	1.5685447	3.2790542	0	0
1977	0	18.6871644	-30.4985994	-11.8114350	1.7573375	4.1392042	0	0
1978	0	13.9289820	-9.0130187	4.9159633	1.9429506	4.0153991	0	0
1979	0	18.5276478	-19.0478097	-0.5201619	1.5600341	4.3625444	0	0
1980	0	20.7131301	-20.5438586	0.1692715	1.5124754	3.6928431	0	0
1981	0	20.2105953	-11.3026541	8.9079412	1.5414290	4.7260935	0	0
1982	-2.1714430	17.5361707	-9.5987314	7.9374393	1.7581649	4.3394482	0	0
1983	-9.1019731	2.5197607	-36.3842929	-33.8645322	0.1779482	1.3603593	0	0
1984	-15.0246012	1.7685917	-13.5757421	-11.8071504	0.8626279	2.7178601	0	0
1985	-14.7115359	8.3105626	-40.5622865	-32.2517239	1.2075223	3.7014237	0	0
1986	-14.1893653	25.4753348	-28.1596224	-2.6842876	2.2665598	6.9420198	0	0
1987	-14.8696165	20.3514831	-27.0536484	-6.7021653	1.9135072	6.1500984	0	0
1988	-14.7032843	18.4304872	-25.6857024	-7.2552152	1.7819524	5.6808892	0	0
1989	-14.4231503	28.6709954	-25.3986130	3.2723824	2.4279758	7.4016333	0	0
1990	-14.1850383	42.3394277	-26.0776141	16.2618136	3.7932278	9.8962904	0	0
1991	-14.7118666	22.9042588	-25.0234633	-2.1192045	2.4124332	7.1604356	0	0
1992	-13.6631326	9.6964450	-24.5985962	-14.9021512	0.7449879	3.9395787	0	0
1993	-11.3163585	-14.2733380	-22.2197351	-36.4930731	-0.5459487	-0.1135330	0	0
1994	-14.7696625	25.6584713	-26.7435205	-1.0850492	2.3519126	7.0826344	0	0
1995	-8.9621960	9.4280243	-22.8954000	-13.4673757	1.1890179	3.9071690	0	0
1996	-14.7960859	26.6328739	-29.4420058	-2.8091319	2.5542266	7.4444732	0	0
1997	-14.9422883	24.2383468	-27.1566168	-2.9182700	2.4996106	7.0429737	22.8088545	29.8518282
1998	-13.9297977	28.1235922	-24.4509914	3.6726008	3.1578761	8.1522364	23.0314621	31.1836985
1999	-14.8722232	49.4837973	-26.0543766	23.4294207	4.7965576	12.1506247	35.8933455	48.0439702
2000	-14.8265422	54.7750252	-25.9231653	28.8518599	5.0621372	12.9404341	38.2054514	51.1458855
2001	-15.7870709	42.5415790	-24.5493841	17.9921949	4.2187808	10.8925258	32.2639799	43.1565057
2002	-15.8190197	43.2052109	-24.7689965	18.4362145	4.2662108	11.0190974	32.6163859	43.6354833
2003	-15.4488625	50.0168280	-24.5066277	25.5102003	4.3129004	11.5142255	32.9859547	44.5001802
2004	-15.4968544	59.4008697	-24.4614864	34.9393833	4.9358060	13.1134055	37.7500638	50.8634693
2005	-15.2977787	45.2735031	-24.4667809	20.8067222	3.9876382	10.6813935	30.4957155	41.1771090
2006	-15.3776296	44.3031470	-24.4623791	19.8407679	3.9285064	10.5306225	30.0436257	40.5742482
2007	-15.3160207	46.8367946	-24.4614931	22.3753015	4.0769409	10.9264336	31.1800074	42.1064410
2008	-15.3453335	48.7640981	-24.4674273	24.2966708	4.2231280	11.2834344	32.2980166	43.5814510
2009	-15.4082331	45.6398485	-24.4616003	21.1782482	4.0199039	10.7641719	30.7437789	41.5079508
2010	-15.3506307	48.9928229	-24.4518262	24.5409968	4.2386392	11.3235582	32.4166217	43.7401799
2011	-15.3733929	49.1211283	-24.4499447	24.6711836	4.2486307	11.3495593	32.4930341	43.8425934
2012	-15.3726168	49.9887429	-24.4401315	25.5486114	4.3061491	11.4967890	32.9329938	44.4297828
2013	-15.3611412	54.2493728	-24.4366899	29.8126829	4.5881052	12.2190810	35.0893227	47.3084037
2014	-15.3852317	61.6834979	-24.4346636	37.2488343	5.0829845	13.4868476	38.8741452	52.3609928
2015	-15.3974918	62.1697825	-24.4285077	37.7412748	5.1160845	13.5716064	39.1272593	52.6988657
2016	-15.3643385	62.2557021	-24.4199348	37.8357674	5.1195938	13.5804290	39.1541157	52.7345447
2017	-15.3520133	62.8679354	-24.4127240	38.4552114	5.1593771	13.6826636	39.4583747	53.1410383
2018	-15.3069165	63.2803712	-24.4026317	38.8777395	5.1837893	13.7447895	39.6449933	53.3897828
2019	-15.2991533	63.2965149	-24.3959357	38.9005792	5.1843316	13.7463990	39.6491927	53.3955917
2020	-15.2629580	61.9051154	-24.3833348	37.5217806	5.0895826	13.5038792	38.9245524	52.4284316
2021	-15.2467539	61.6538978	-24.3805240	37.2733738	5.0718476	13.4583606	38.7889368	52.2472974
2022	-15.2511934	62.7054634	-24.3811687	38.3242947	5.1419529	13.6374040	39.3251284	52.9625324
2023	-15.2428109	62.5155012	-24.3805147	38.1349865	5.1287689	13.6040119	39.2242573	52.8282692
2024	-15.2606257	61.8149269	-24.3824299	37.4324970	5.0834658	13.4879696	38.8777913	52.3657609
2025	-15.2461778	62.6437299	-24.3806796	38.2630503	5.1375115	13.6263348	39.2910933	52.9174281
2026	-15.2602104	61.3346878	-24.3823534	36.9523344	5.0515417	13.4066127	38.6336719	52.0402846
2027	-15.2475178	61.7125344	-24.3803063	37.3322281	5.0757955	13.4683473	38.8191414	52.2874887
2028	-15.2548310	61.4320727	-24.3815922	37.0504805	5.0577072	13.4216171	38.6807735	52.1023906
2029	-15.2397494	61.2924301	-24.3800988	36.9123313	5.0474110	13.3955649	38.6020486	51.9976135
2030	-15.2634428	60.2927869	-24.3826893	35.9100976	4.9826489	13.2297350	38.1067588	51.3364938
2031	-15.2494956	60.9939961	-24.3810913	36.6129048	5.0282626	13.3463370	38.4556082	51.8019452
2032	-15.2761650	59.8226839	-24.3833867	35.4392972	4.9522600	13.1523583	37.8744006	51.0267589
2033	-15.2320411	61.0377837	-24.3791700	36.6586137	5.0300111	13.3509431	38.4689442	51.8198873
2034	-15.2537609	60.2463567	-24.3807749	35.8655818	4.9789020	13.2203354	38.0781148	51.2984502
2035	-15.3217616	60.5459857	-24.3885228	36.1574629	5.0033264	13.2825085	38.2649179	51.5474264

Table B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

	North Bay Area			South Bay Area				Central Coastal Area		
Calendar Year	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	2,051	34,919	0	36,970	0	0	0
1963	0	0	0	7,900	49,811	0	57,711	0	0	0
1964	0	0	0	5,931	68,203	0	74,134	0	0	0
1965	0	0	0	10,918	68,765	62,926	142,609	0	0	0
1966	0	0	0	19,330	52,135	121,140	192,605	0	0	0
1967	0	0	0	19,958	53,785	163,255	236,998	0	0	0
1968	6,989	0	6,989	29,898	120,985	341,769	492,652	0	0	0
1969	8,551	0	8,551	31,859	3,904	298,968	334,731	0	0	0
1970	13,598	0	13,598	49,688	0	431,442	481,130	0	0	0
1971	10,609	0	10,609	23,842	28,329	416,328	468,499	0	0	0
1972	14,434	0	14,434	54,839	144,669	524,207	723,715	0	0	0
1973	14,449	0	14,449	18,397	15,590	547,808	581,795	0	0	0
1974	17,473	0	17,473	9,499	29	636,187	645,715	0	0	0
1975	14,779	0	14,779	22,317	4,765	425,285	452,367	0	0	0
1976	20,856	0	20,856	97,875	121,693	502,768	722,336	0	0	0
1977	22,635	0	22,635	82,578	123,044	497,792	703,414	0	0	0
1978	21,692	0	21,692	74,960	40,012	653,290	768,262	0	0	0
1979	16,237	0	16,237	137,089	77,140	652,575	866,804	0	0	0
1980	19,945	0	19,945	98,914	65,004	518,433	682,351	0	0	0
1981	23,841	0	23,841	126,888	141,961	569,996	838,845	0	0	0
1982	12,159	0	12,159	88,298	42,497	587,133	717,928	0	0	0
1983	2,335	0	2,335	10,086	6,681	183,594	200,361	0	0	0
1984	4,866	0	4,866	27,042	13,306	353,658	394,006	0	0	0
1985	10,186	0	10,186	80,102	103,092	467,688	650,882	0	0	0
1986	15,472	0	15,472	113,771	132,753	943,717	1,190,241	0	0	0
1987	27,222	0	27,222	222,443	241,049	836,062	1,299,554	0	0	0
1988	41,918	21,124	63,042	230,675	298,554	783,282	1,312,511	0	0	0
1989	17,043	66,384	83,427	290,247	288,105	995,678	1,574,030	0	0	0
1990	58,770	111,541	170,311	532,131	510,264	1,478,376	2,520,771	0	0	0
1991	7,713	19,404	27,117	105,769	142,150	316,937	564,856	0	(2,628)	(2,628)
1992	12,437	23,729	36,166	93,987	122,717	274,477	491,181	0	0	0
1993	(7,161)	(18,627)	(25,788)	(35,933)	(12,725)	(76,898)	(125,556)	0	0	0
1994	38,784	77,080	115,864	234,435	256,594	639,665	1,130,694	0	0	0
1995	15,406	36,033	51,439	155,970	91,766	148,307	396,043	0	0	0
1996	31,188	95,446	126,634	211,893	184,301	724,762	1,120,956	489	0	489
1997	26,623	184,116	210,739	336,876	222,124	897,455	1,456,455	32,903	222,426	255,329
1998	100,740	145,688	246,428	472,915	386,516	736,250	1,595,681	156,387	812,959	969,346
1999	143,338	218,828	362,166	907,071	735,459	1,971,894	3,614,424	182,758	2,185,328	2,368,086
2000	161,828	236,108	397,936	984,824	738,617	2,140,922	3,864,363	197,372	2,326,421	2,523,793
2001	138,317	186,544	324,861	818,249	613,553	1,778,414	3,210,216	164,728	1,963,016	2,127,744
2002	151,239	184,189	335,428	826,750	620,062	1,797,282	3,244,094	167,428	1,984,804	2,152,232
2003	161,191	229,465	390,656	848,074	774,329	1,843,640	3,466,043	1,112,505	2,024,135	3,136,640
2004	192,283	268,396	460,679	967,595	883,456	2,103,467	3,954,518	1,271,587	2,313,575	3,585,162
2005	161,582	217,232	378,814	785,680	717,360	1,707,999	3,211,039	1,029,428	1,872,982	2,902,410
2006	163,728	214,270	377,998	774,391	707,052	1,683,458	3,164,901	1,014,356	1,845,560	2,859,916
2007	176,978	222,836	399,814	803,327	733,472	1,746,363	3,283,162	1,052,661	1,915,255	2,967,916
2008	189,444	231,242	420,686	830,788	758,546	1,806,060	3,395,394	1,089,536	1,982,346	3,071,882
2009	186,313	220,526	406,839	791,910	723,048	1,721,543	3,236,501	1,037,699	1,888,031	2,925,730
2010	202,951	232,888	435,839	833,777	761,274	1,812,560	3,407,611	1,093,505	1,989,566	3,083,071
2011	211,154	233,980	445,134	835,709	763,038	1,816,758	3,415,505	1,096,065	1,994,223	3,090,288
2012	220,699	237,530	458,229	846,718	773,091	1,840,693	3,460,502	1,110,745	2,020,932	3,131,677
2013	243,563	253,630	497,193	900,759	822,432	1,958,171	3,681,362	1,182,711	2,151,870	3,334,581
2014	279,468	281,536	561,004	995,599	909,025	2,164,344	4,068,968	1,309,026	2,381,692	3,690,718
2015	290,891	283,938	574,829	1,001,943	914,818	2,178,136	4,094,897	1,317,471	2,397,061	3,714,532
2016	300,207	284,533	584,740	1,002,604	915,421	2,179,573	4,097,598	1,318,363	2,398,684	3,717,047
2017	311,807	287,066	598,873	1,010,243	922,395	2,196,179	4,128,817	1,328,525	2,417,173	3,745,698
2018	323,038	288,790	611,828	1,014,895	926,643	2,206,293	4,147,831	1,334,745	2,428,488	3,763,233
2019	332,972	289,155	622,127	1,015,010	926,748	2,206,543	4,148,301	1,334,890	2,428,752	3,763,642
2020	336,809	284,218	621,027	996,859	910,175	2,167,085	4,074,119	1,310,711	2,384,760	3,695,471
2021	337,246	283,305	620,551	993,464	907,076	2,159,705	4,060,245	1,306,182	2,376,521	3,682,703
2022	341,909	287,220	629,129	1,006,866	919,312	2,188,839	4,115,017	1,324,064	2,409,054	3,733,118
2023	341,032	286,483	627,515	1,004,351	917,015	2,183,370	4,104,736	1,320,706	2,402,947	3,723,653
2024	338,019	283,953	621,972	995,681	909,100	2,164,526	4,069,307	1,309,144	2,381,909	3,691,053
2025	341,612	286,971	628,583	1,006,028	918,548	2,187,018	4,111,594	1,322,936	2,407,003	3,729,939
2026	335,896	282,169	618,065	989,581	903,531	2,151,264	4,044,376	1,301,008	2,367,103	3,668,111
2027	337,508	283,525	621,033	994,203	907,750	2,161,312	4,063,265	1,307,187	2,378,349	3,685,536
2028	336,305	282,514	618,819	990,719	904,570	2,153,738	4,049,027	1,302,559	2,369,929	3,672,488
2029	335,622	281,939	617,561	988,759	902,779	2,149,476	4,041,014	1,299,940	2,365,165	3,665,105
2030	331,315	278,321	609,636	976,356	891,455	2,122,512	3,990,323	1,283,412	2,335,092	3,618,504
2031	334,348	280,870	615,218	985,081	899,422	2,141,482	4,025,985	1,295,049	2,356,263	3,651,312
2032	329,294	276,623	605,917	970,559	886,162	2,109,909	3,966,630	1,275,669	2,321,003	3,596,672
2033	334,464	280,966	615,430	985,416	899,727	2,142,210	4,027,353	1,295,497	2,357,079	3,652,576
2034	331,066	278,111	609,177	975,649	890,809	2,120,974	3,987,432	1,282,461	2,333,361	3,615,822
2035	332,691	279,476	612,167	980,310	895,065	2,131,110	4,006,485	1,288,686	2,344,686	3,633,372
Total	10,559,916	10,381,264	20,941,180	38,731,236	35,346,822	92,949,134	167,027,192	41,761,094	83,832,875	125,593,969

Note: B-18 includes Extra Peaking Charges for additional power shown in Table 8.

Table B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	68,978	5,176	0	0	440,922	2,355	4,760	65,680	587,871
1969	56,774	101	0	0	321,387	181	3,338	17,956	399,737
1970	69,819	6,811	0	0	470,866	0	5,595	16,550	569,641
1971	53,097	7,747	0	0	769,055	4,785	6,353	158,419	999,456
1972	62,364	8,515	0	0	1,151,788	2,057	7,375	379,687	1,611,786
1973	33,931	4,615	0	0	770,120	2,308	3,017	77,630	891,621
1974	49,114	4,413	0	46,752	677,660	2,207	3,114	106,332	889,592
1975	63,140	4,671	0	34,580	848,249	2,491	3,920	134,295	1,091,346
1976	70,851	5,131	0	94,653	966,820	2,737	4,910	100,597	1,245,699
1977	26,565	1,758	0	84,875	498,624	3,644	2,602	43,067	661,135
1978	109,278	941	0	191,345	1,620,906	4,332	6,312	24,979	1,958,093
1979	108,020	4,874	0	194,224	2,372,800	5,605	13,168	434,728	3,133,419
1980	89,395	1,949	0	122,404	1,741,468	4,797	7,824	150,978	2,118,815
1981	130,571	18,659	0	264,677	2,411,123	7,325	9,003	265,722	3,107,080
1982	108,006	932	0	145,663	2,363,614	4,517	6,719	47,885	2,677,336
1983	60,173	0	0	13,734	910,284	5,552	3,071	1,189	994,003
1984	83,671	0	0	219,000	2,020,940	6,032	7,609	10,655	2,347,907
1985	115,345	13,024	0	244,127	2,581,254	8,479	8,902	273,808	3,244,939
1986	234,937	5,471	0	375,031	4,848,805	17,299	16,760	373,240	5,871,543
1987	196,416	10,781	0	527,765	4,402,758	16,946	16,662	394,359	5,565,687
1988	188,978	16,122	0	521,543	4,273,564	15,596	11,984	376,143	5,403,930
1989	282,839	15,324	0	676,153	6,119,803	19,895	21,254	644,203	7,779,471
1990	221,517	7,805	0	853,964	4,821,183	12,206	12,297	348,301	6,277,273
1991	4,401	1,049	0	185,311	47,950	0	521	10,350	249,582
1992	75,936	4,358	0	222,086	1,640,103	6,422	5,159	149,277	2,103,341
1993	21,888	4,806	0	78,291	403,151	5,074	1,603	120,367	635,180
1994	136,212	8,254	0	483,708	3,425,400	10,010	10,160	295,017	4,368,761
1995	176,533	4,433	0	391,532	3,155,530	13,223	10,103	276,895	4,028,249
1996	278,603	9,447	0	721,871	6,144,536	23,003	15,976	1,167,178	8,360,614
1997	335,327	0	0	628,068	5,454,444	0	17,489	101,631	6,536,959
1998	282,531	17,690	0	689,051	6,040,276	19,977	20,249	626,793	7,696,567
1999	392,486	22,062	0	969,125	8,774,067	29,416	29,547	871,457	11,088,160
2000	420,465	23,635	0	1,039,127	9,406,559	31,513	31,590	932,790	11,885,679
2001	356,178	20,021	0	879,393	7,947,558	26,695	26,983	790,839	10,047,667
2002	360,402	20,259	0	889,829	8,041,582	27,011	27,308	800,217	10,166,608
2003	384,334	21,604	0	1,046,286	8,539,336	28,805	29,014	853,357	10,902,736
2004	436,439	24,533	0	1,188,867	9,712,748	32,710	32,836	969,046	12,397,179
2005	357,246	20,082	0	972,171	7,929,356	26,775	27,025	793,210	10,125,865
2006	352,355	19,806	0	958,780	7,819,036	26,409	26,669	782,351	9,985,406
2007	365,557	20,548	0	995,033	8,117,370	27,398	27,634	811,665	10,365,205
2008	376,809	21,181	0	1,025,697	8,369,996	28,242	28,458	836,646	10,687,029
2009	359,941	20,233	0	979,531	7,989,817	26,977	27,225	799,196	10,202,920
2010	378,122	21,255	0	1,029,288	8,399,477	28,340	28,555	839,563	10,724,600
2011	378,977	21,303	0	1,031,621	8,418,616	28,404	28,618	841,461	10,749,000
2012	383,765	21,572	0	1,044,723	8,526,469	28,762	28,968	852,091	10,886,350
2013	407,266	22,893	0	1,109,024	9,055,697	30,524	30,691	904,271	11,560,366
2014	448,515	25,211	0	1,221,889	9,984,615	33,616	33,714	995,858	12,743,418
2015	451,271	25,367	0	1,229,433	10,046,705	33,822	33,916	1,001,979	12,822,493
2016	451,555	25,382	0	1,230,210	10,053,136	33,843	33,936	1,002,609	12,830,671
2017	454,888	25,570	0	1,239,327	10,128,113	34,093	34,181	1,010,009	12,926,181
2018	456,901	25,683	0	1,244,838	10,173,540	34,244	34,327	1,014,478	12,984,011
2019	456,957	25,686	0	1,244,992	10,174,767	34,248	34,332	1,014,605	12,985,587
2020	449,071	25,243	0	1,223,411	9,997,116	33,657	33,754	997,094	12,759,346
2021	447,588	25,159	0	1,219,355	9,963,747	33,546	33,646	993,802	12,716,843
2022	453,402	25,487	0	1,235,269	10,094,809	33,982	34,070	1,006,711	12,883,730
2023	452,323	25,426	0	1,232,314	10,070,426	33,901	33,991	1,004,316	12,852,697
2024	448,548	25,213	0	1,221,983	9,985,403	33,618	33,716	995,934	12,744,415
2025	453,048	25,466	0	1,234,298	10,086,764	33,955	34,045	1,005,925	12,873,501
2026	445,910	25,066	0	1,214,761	9,925,887	33,420	33,523	990,076	12,668,643
2027	447,910	25,178	0	1,220,239	9,971,034	33,571	33,668	994,518	12,726,118
2028	446,382	25,092	0	1,216,060	9,936,698	33,456	33,555	991,124	12,682,367
2029	445,541	25,044	0	1,213,756	9,917,688	33,393	33,494	989,256	12,658,172
2030	440,147	24,742	0	1,198,995	9,796,198	32,989	33,099	977,279	12,503,449
2031	443,936	24,954	0	1,209,365	9,881,577	33,273	33,376	985,692	12,612,173
2032	437,639	24,601	0	1,192,129	9,739,611	32,801	32,917	971,711	12,431,409
2033	444,088	24,963	0	1,209,781	9,884,983	33,283	33,387	986,030	12,616,515
2034	439,845	24,724	0	1,198,168	9,789,361	32,965	33,078	976,610	12,494,751
2035	441,860	24,838	0	1,203,685	9,834,826	33,116	33,225	981,084	12,552,634
Total	19,362,877	1,069,939	0	50,023,161	420,200,071	1,395,828	1,439,880	41,758,771	535,250,527

Table B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

	Southern California Area									
Calendar Year	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	39,429	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	12,786	0	4,495	1,516	0	32,107	0
1973	286	28,968	102,811	6,895	159,535	3,854	0	0	301,444	0
1974	15,558	28,982	100,954	9,891	157,742	4,932	221	0	177,172	6,529
1975	99,186	28,567	108,253	12,758	170,111	6,392	0	0	136,067	53,485
1976	385,090	38,365	135,276	17,835	213,595	8,163	0	0	139,356	68,933
1977	199,168	21,006	0	23,598	0	1,973	1,702	0	239,663	86,821
1978	584,764	45,623	175,053	20,988	265,597	2,745	0	0	37,419	71,711
1979	1,063,296	83,973	229,404	28,724	341,952	2,339	91,188	0	239	3,832
1980	1,396,457	51,470	257,979	29,368	402,943	3,682	94,810	0	0	16,625
1981	1,480,002	111,339	274,101	33,627	430,230	23,855	90,575	0	254,758	57,548
1982	920,638	131,772	291,510	27,080	459,378	0	229,690	0	125,753	188,836
1983	334,998	(303,309)	173,159	10,843	273,777	386	0	0	(71,250)	(8,725)
1984	490,100	(97,976)	275,966	19,741	437,539	15	0	0	(65,520)	(90,282)
1985	821,689	(354,915)	413,691	34,626	657,462	0	0	32,491	(47,420)	(32,264)
1986	1,110,219	54,950	729,716	60,349	1,162,096	5,555	0	105,487	69,490	102,313
1987	1,026,614	(34,269)	672,295	63,974	1,089,869	32,723	588	158,926	91,849	52,070
1988	1,024,362	(71,004)	692,111	67,227	1,139,443	12,046	302	50,890	95,801	40,084
1989	1,741,775	180,514	982,020	97,426	1,638,721	38,373	8,980	351,923	343,439	212,174
1990	2,444,369	423,751	1,403,557	111,009	2,314,957	90,535	0	446,685	600,339	530,774
1991	286,550	(3,024)	277,125	33,951	457,075	17,702	128,428	132,724	35,364	52,153
1992	572,195	(196,468)	235,527	11,723	388,449	4,744	236,553	76,286	(25,201)	(59,346)
1993	(147,484)	(498,909)	(787,081)	(1,948)	(1,298,218)	(2,512)	(49,523)	(22,173)	(153,059)	(505,294)
1994	1,831,411	63,110	187,725	34,283	309,578	40,993	726,986	313,650	120,524	200,939
1995	646,716	(199,764)	(308,661)	6,948	(418,948)	9,260	144,120	95,203	(9,300)	(172,661)
1996	1,819,446	49,485	470,476	17,708	775,796	15,971	280,158	372,027	44,624	120,470
1997	1,981,764	(28,694)	147,471	22,340	78,584	14,142	522,809	394,330	45,697	70,035
1998	2,339,871	188,004	356,647	71,227	588,238	80,981	613,066	611,781	1,584,075	277,907
1999	4,035,612	747,077	815,839	116,808	1,345,606	127,717	1,298,400	964,858	1,893,032	1,017,151
2000	4,582,297	967,291	933,902	127,710	1,540,331	139,178	1,410,498	1,046,864	2,324,647	646,859
2001	3,960,072	689,185	698,601	106,010	1,152,237	115,535	1,173,076	869,020	1,835,714	495,976
2002	4,200,022	760,762	718,112	107,242	1,184,417	117,241	1,187,124	881,855	1,995,789	497,393
2003	4,790,978	1,091,178	761,797	133,082	1,256,473	130,406	1,336,821	980,875	3,383,567	949,772
2004	5,783,388	1,590,180	1,002,265	169,904	1,653,083	150,643	1,932,754	1,133,099	4,451,611	1,249,576
2005	4,806,209	1,032,747	635,322	143,595	1,047,868	119,831	1,852,067	901,327	2,821,824	792,091
2006	4,946,325	1,029,777	613,232	149,826	1,011,433	118,014	2,130,611	887,669	2,723,706	764,548
2007	5,398,478	1,212,740	671,988	169,137	1,108,343	123,239	2,546,264	926,985	2,984,671	837,803
2008	5,835,923	1,316,880	727,972	187,546	1,200,680	127,502	2,961,629	959,027	3,233,327	907,602
2009	5,786,044	1,147,859	651,383	188,753	1,074,360	120,980	3,125,697	909,987	2,893,156	812,113
2010	6,399,773	1,330,122	730,441	202,011	1,204,756	128,024	3,637,956	962,958	3,244,306	910,681
2011	6,706,052	1,337,179	737,144	215,017	1,215,810	128,373	3,980,739	965,581	3,274,067	919,037
2012	7,109,982	1,384,733	757,952	229,460	1,250,127	130,246	4,376,041	979,671	3,366,483	944,977
2013	7,957,328	1,615,847	868,603	260,000	1,432,634	139,497	5,044,561	1,049,252	3,857,955	1,082,934
2014	9,263,991	2,018,886	1,054,722	305,410	1,739,609	155,413	6,082,060	1,168,979	4,684,617	1,314,979
2015	9,410,832	2,045,577	1,068,142	322,082	1,761,741	156,394	6,120,624	1,176,354	4,744,218	1,331,710
2016	9,423,670	2,050,700	1,072,672	333,682	1,769,214	156,608	6,128,319	1,177,959	4,764,336	1,337,358
2017	9,497,851	2,084,272	1,083,509	345,990	1,787,088	157,839	6,176,464	1,187,232	4,812,470	1,350,869
2018	9,552,364	2,107,173	1,095,402	359,058	1,806,702	158,745	6,210,925	1,194,046	4,865,291	1,365,697
2019	9,549,912	2,108,410	1,095,864	369,773	1,807,463	158,705	6,209,689	1,193,738	4,867,344	1,366,271
2020	9,365,692	2,033,681	1,067,200	373,654	1,760,188	155,643	6,090,897	1,170,712	4,740,035	1,330,536
2021	9,336,025	2,020,218	1,063,266	379,461	1,753,697	155,150	6,071,294	1,167,003	4,722,554	1,325,630
2022	9,472,488	2,077,177	1,087,391	391,263	1,793,489	157,419	6,159,283	1,184,060	4,829,711	1,355,708
2023	9,440,089	2,066,917	1,082,418	397,249	1,785,286	156,881	6,139,046	1,180,011	4,807,623	1,349,509
2024	9,355,193	2,028,842	1,068,162	401,057	1,761,775	155,470	6,083,989	1,169,399	4,744,306	1,331,734
2025	9,462,209	2,073,857	1,086,922	412,054	1,792,715	157,246	6,152,808	1,182,776	4,827,621	1,355,123
2026	9,295,755	2,002,817	1,057,624	409,021	1,744,390	154,482	6,045,406	1,161,970	4,697,496	1,318,596
2027	9,342,332	2,023,407	1,062,841	413,685	1,752,995	155,255	6,075,498	1,167,792	4,720,662	1,325,101
2028	9,302,631	2,008,136	1,052,496	414,326	1,735,935	154,597	6,050,335	1,162,828	4,674,720	1,312,202
2029	9,280,232	2,000,649	1,049,040	417,355	1,730,233	154,223	6,036,129	1,160,029	4,659,371	1,307,893
2030	9,154,816	1,946,327	1,025,325	415,427	1,691,118	152,139	5,955,203	1,144,351	4,554,039	1,278,328
2031	9,248,969	1,984,419	1,043,751	421,543	1,721,512	153,705	6,015,385	1,156,122	4,635,883	1,301,302
2032	9,099,865	1,920,809	1,015,551	415,956	1,674,996	151,226	5,919,368	1,137,484	4,510,624	1,266,139
2033	9,246,541	1,986,897	1,043,878	424,520	1,721,720	153,663	6,014,388	1,155,819	4,636,439	1,301,458
2034	9,148,066	1,943,915	1,025,589	421,716	1,691,556	152,026	5,950,802	1,143,509	4,555,211	1,278,657
2035	9,198,480	1,959,735	1,032,021	424,088	1,702,165	152,864	5,983,024	1,149,809	4,583,784	1,286,676
Total	312,216,306	61,670,824	42,255,424	11,959,448	69,359,246	5,755,463	174,787,343	43,231,240	152,025,640	43,264,656

Table B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	36,970
1963	0	0	0	0	0	0	0	0	0	57,711
1964	0	0	0	0	0	0	0	0	0	74,134
1965	0	0	0	0	0	0	0	0	0	142,609
1966	0	0	0	0	0	0	0	0	0	192,605
1967	0	0	0	0	0	0	0	0	0	236,998
1968	0	0	0	30,401	0	0	0	0	0	1,117,913
1969	0	0	0	30,627	0	0	0	0	0	773,646
1970	0	0	0	39,429	0	0	0	0	0	1,103,798
1971	0	0	0	34,871	0	0	0	0	0	1,513,435
1972	0	848,011	0	947,266	0	0	0	0	0	3,297,201
1973	0	1,083,333	0	1,687,126	0	0	0	0	0	3,174,991
1974	0	1,872,299	0	2,374,280	0	0	0	0	0	3,927,060
1975	0	3,887,151	0	4,501,970	0	0	0	0	0	6,060,462
1976	0	5,485,263	0	6,491,876	0	0	0	0	0	8,480,767
1977	0	(796,688)	0	(222,757)	0	0	0	0	0	1,164,427
1978	0	3,739,441	0	4,943,341	0	0	0	0	0	7,691,388
1979	0	4,064,401	0	5,909,348	0	0	0	0	0	9,925,808
1980	0	5,417,788	0	7,671,122	0	0	0	0	0	10,492,233
1981	0	10,504,656	0	13,260,691	0	0	0	0	0	17,230,457
1982	0	7,633,402	0	10,008,059	0	0	0	0	0	13,415,482
1983	0	(8,438,539)	0	(8,028,660)	0	0	0	0	0	(6,831,961)
1984	0	(6,594,102)	0	(5,624,519)	0	0	0	0	0	(2,877,740)
1985	0	(15,833,695)	0	(14,308,335)	0	0	0	0	0	(10,402,328)
1986	0	1,167,681	0	4,567,856	0	0	0	0	0	11,645,112
1987	0	(2,863,691)	0	290,948	0	0	0	0	0	7,183,411
1988	0	(3,273,328)	0	(222,066)	0	0	0	0	0	6,557,417
1989	0	9,640,239	0	15,235,584	0	0	0	0	0	24,672,512
1990	0	30,812,463	204,754	39,383,193	0	0	0	0	0	48,351,548
1991	0	187,379	22,630	1,628,057	0	0	0	0	0	2,466,984
1992	0	(9,228,604)	0	(7,984,142)	0	0	0	0	0	(5,353,454)
1993	0	(21,724,199)	0	(25,190,400)	0	0	0	0	0	(24,706,564)
1994	0	3,863,480	0	7,692,679	0	0	0	0	0	13,307,998
1995	0	(5,037,120)	0	(5,244,207)	0	0	0	0	0	(768,476)
1996	0	1,410,936	0	5,377,097	0	0	0	0	0	14,985,790
1997	0	1,019,837	0	4,268,315	0	0	0	0	0	12,727,797
1998	0	13,674,271	113,748	20,499,816	0	0	0	0	0	31,007,838
1999	42,381	49,914,711	316,366	62,635,558	0	0	0	0	0	80,068,394
2000	121,286	62,284,273	370,176	76,495,312	0	0	0	0	0	95,167,083
2001	108,872	44,692,621	257,251	56,154,170	0	0	0	0	0	71,864,658
2002	149,218	41,558,076	262,385	53,619,636	0	0	0	0	0	69,517,998
2003	171,487	45,408,896	664,595	61,059,927	0	0	0	0	0	78,956,002
2004	225,618	61,903,754	852,896	82,098,771	0	0	0	0	0	102,496,309
2005	178,770	38,655,089	570,274	53,557,014	0	0	0	0	0	70,175,142
2006	185,828	37,665,581	550,928	52,777,478	0	0	0	0	0	69,165,699
2007	218,179	42,484,304	601,614	59,283,745	0	0	0	0	0	76,299,842
2008	545,193	46,764,948	640,076	65,408,305	0	0	0	0	0	82,983,296
2009	487,833	41,927,345	577,674	59,703,184	0	0	0	0	0	76,475,174
2010	547,041	48,461,140	644,866	68,404,075	0	0	0	0	0	86,055,196
2011	552,059	49,512,384	647,459	70,190,901	0	0	0	0	0	87,890,828
2012	567,642	51,807,057	664,945	73,569,316	0	0	0	0	0	91,506,074
2013	650,514	60,732,239	750,206	85,441,570	0	0	0	0	0	104,515,072
2014	789,901	75,823,710	898,914	105,301,191	0	0	0	0	0	126,365,299
2015	799,951	77,846,246	908,726	107,692,597	0	0	0	0	0	128,899,348
2016	803,343	79,151,223	910,561	109,079,645	0	0	0	0	0	130,309,701
2017	811,460	81,255,131	922,906	111,473,081	0	0	0	0	0	132,872,650
2018	820,366	83,215,320	931,292	113,682,381	0	0	0	0	0	135,189,284
2019	820,710	84,325,771	931,705	114,805,355	0	0	0	0	0	136,325,012
2020	799,246	82,762,937	904,051	112,554,472	0	0	0	0	0	133,704,435
2021	796,298	82,886,749	899,065	112,576,410	0	0	0	0	0	133,656,752
2022	814,366	84,994,796	920,087	115,237,238	0	0	0	0	0	136,598,232
2023	810,642	84,590,534	916,296	114,722,501	0	0	0	0	0	136,031,102
2024	799,966	83,254,599	902,259	113,056,751	0	0	0	0	0	134,183,498
2025	814,014	84,908,536	918,859	115,144,740	0	0	0	0	0	136,488,357
2026	792,074	82,310,350	892,656	111,882,637	0	0	0	0	0	132,881,832
2027	795,980	82,935,282	900,242	112,671,072	0	0	0	0	0	133,767,024
2028	788,232	82,218,535	894,613	111,769,586	0	0	0	0	0	132,792,287
2029	785,644	81,930,276	891,843	111,402,917	0	0	0	0	0	132,384,769
2030	767,883	79,892,257	871,812	108,849,025	0	0	0	0	0	129,570,937
2031	781,685	81,391,699	885,859	110,741,834	0	0	0	0	0	131,646,522
2032	760,564	78,988,302	862,402	107,723,286	0	0	0	0	0	128,323,914
2033	781,778	81,447,244	886,760	110,801,105	0	0	0	0	0	131,712,979
2034	768,083	79,853,257	870,910	108,803,297	0	0	0	0	0	129,510,479
2035	772,898	80,428,276	876,797	109,550,617	0	0	0	0	0	130,355,275
Total	22,227,005	2,552,705,513	28,511,458	3,519,969,566	0	0	0	0	0	4,368,782,434

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 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	11,750	43,787	0	55,537	0	0	0
1963	0	0	0	151,050	190,362	449,124	790,536	0	0	0
1964	0	0	0	170,658	277,596	622,888	1,071,142	6,059	20,500	26,559
1965	0	0	0	245,544	404,537	1,159,913	1,809,994	11,426	31,741	43,167
1966	18,080	0	18,080	271,642	421,959	1,414,916	2,108,517	20,183	49,661	69,844
1967	41,609	0	41,609	347,458	498,700	1,688,151	2,534,309	37,976	84,159	122,135
1968	128,726	0	128,726	391,926	603,776	1,987,370	2,983,072	63,524	133,082	196,606
1969	254,848	0	254,848	446,844	539,662	2,085,483	3,071,989	118,158	235,272	353,430
1970	277,683	0	277,683	460,562	532,901	2,205,026	3,198,489	130,874	259,884	390,758
1971	227,611	0	227,611	421,472	552,450	2,172,163	3,146,085	131,689	262,451	394,140
1972	225,117	0	225,117	509,083	678,856	2,322,690	3,510,629	137,448	274,498	411,946
1973	221,231	31,399	252,630	473,599	549,729	2,340,894	3,364,222	134,243	269,331	403,574
1974	240,640	32,973	273,613	496,932	564,931	2,508,634	3,570,497	135,250	271,887	407,137
1975	237,608	36,328	273,936	545,293	606,069	2,412,201	3,563,563	151,573	302,776	454,349
1976	271,444	40,877	312,321	635,591	735,151	2,502,785	3,873,527	260,651	505,756	766,407
1977	293,781	45,140	338,921	598,834	713,898	2,478,684	3,791,416	270,375	527,182	797,557
1978	274,027	49,225	323,252	653,002	692,954	2,788,706	4,134,662	277,017	542,742	819,759
1979	289,639	53,391	343,030	716,449	736,697	2,815,823	4,268,969	274,943	542,193	817,136
1980	311,013	67,811	378,824	833,180	866,830	3,031,407	4,731,417	299,841	592,376	892,217
1981	347,376	87,485	434,861	795,261	879,680	2,920,652	4,595,593	318,466	640,799	959,265
1982	438,577	107,012	545,589	828,175	849,563	3,207,974	4,885,712	320,463	639,218	959,681
1983	355,022	151,387	506,409	846,471	902,118	3,832,928	5,581,517	349,487	689,560	1,039,047
1984	467,677	224,431	692,108	1,133,118	1,098,245	5,745,063	7,976,426	381,958	752,243	1,134,201
1985	736,619	364,602	1,101,221	1,583,457	1,794,484	6,565,903	9,943,844	429,710	842,685	1,272,395
1986	1,085,358	693,036	1,778,394	1,407,524	1,532,058	6,880,368	9,819,950	417,475	822,686	1,240,161
1987	1,773,352	1,560,480	3,333,832	1,894,697	2,014,307	6,689,924	10,598,928	415,101	868,610	1,283,711
1988	2,244,894	2,345,177	4,590,071	1,897,057	2,214,477	6,380,221	10,491,755	451,429	1,037,829	1,489,258
1989	2,376,961	3,323,767	5,700,728	1,792,448	1,857,791	5,867,001	9,517,240	445,925	1,224,445	1,670,370
1990	2,747,655	3,437,857	6,185,512	2,228,736	2,267,039	6,686,076	11,181,851	518,980	1,296,111	1,815,091
1991	2,748,206	3,688,741	6,436,947	1,396,613	1,620,047	4,526,522	7,543,182	522,414	1,523,250	2,045,664
1992	2,554,512	3,534,100	6,088,612	1,710,484	2,003,611	5,387,880	9,101,975	573,018	1,503,732	2,076,750
1993	2,598,657	3,521,862	6,120,519	2,514,934	2,014,908	6,522,775	11,052,617	640,378	1,673,595	2,313,973
1994	2,717,891	3,542,556	6,260,447	2,535,814	2,640,681	7,311,661	12,488,156	795,088	2,417,959	3,213,047
1995	2,649,047	3,517,139	6,166,186	2,651,056	2,282,919	5,882,222	10,816,197	1,028,134	4,784,597	5,812,731
1996	2,690,968	3,878,997	6,569,965	2,170,476	2,107,804	6,570,073	10,848,353	1,909,230	13,149,388	15,058,618
1997	2,642,014	3,774,243	6,416,257	2,390,202	2,112,181	6,805,699	11,308,082	2,680,048	23,334,939	26,014,987
1998	3,044,554	4,298,663	7,343,217	3,131,823	2,831,290	7,291,457	13,254,570	3,384,965	29,431,118	32,816,083
1999	2,991,851	4,221,778	7,213,629	3,295,795	3,048,957	8,577,972	14,922,724	3,416,283	30,550,022	33,966,305
2000	3,010,827	4,261,833	7,272,660	3,350,976	2,999,006	8,712,886	15,062,868	3,465,586	31,027,949	34,493,535
2001	3,008,545	4,240,375	7,248,920	3,203,605	2,894,220	8,408,820	14,506,645	3,436,819	30,673,145	34,109,964
2002	3,035,277	4,250,895	7,286,172	3,251,046	2,930,737	8,514,055	14,695,838	3,449,770	30,794,461	34,244,231
2003	3,008,815	4,252,386	7,261,201	3,091,691	3,020,420	8,167,636	14,279,747	4,937,945	30,432,603	35,370,548
2004	3,043,059	4,292,921	7,335,980	3,204,205	3,123,160	8,412,306	14,739,671	5,086,238	30,704,248	35,790,486
2005	3,024,002	4,251,177	7,275,179	3,058,999	2,990,566	8,096,529	14,146,094	4,898,432	30,359,759	35,258,191
2006	3,027,445	4,245,617	7,273,062	3,039,797	2,973,035	8,054,776	14,067,608	4,871,801	30,311,130	35,182,931
2007	3,043,018	4,251,496	7,294,514	3,058,868	2,990,449	8,096,254	14,145,571	4,895,564	30,354,806	35,250,370
2008	3,082,776	4,289,381	7,372,157	3,176,311	3,097,685	8,351,582	14,625,578	5,064,202	30,662,060	35,726,262
2009	3,081,701	4,275,462	7,357,163	3,128,775	3,054,279	8,248,223	14,431,277	4,999,802	30,544,288	35,544,090
2010	3,100,880	4,285,944	7,386,824	3,162,694	3,085,246	8,321,980	14,569,920	5,043,826	30,625,033	35,668,859
2011	3,112,134	4,284,677	7,396,811	3,156,877	3,079,938	8,309,335	14,546,150	5,035,027	30,609,051	35,644,078
2012	3,124,356	4,286,550	7,410,906	3,161,882	3,084,508	8,320,228	14,566,618	5,040,875	30,619,861	35,660,736
2013	3,063,682	4,208,349	7,272,031	2,810,550	2,759,359	7,431,671	13,001,580	4,681,401	29,966,645	34,648,046
2014	3,055,257	4,188,700	7,243,957	2,718,928	2,642,642	7,143,967	12,505,537	4,579,875	29,773,908	34,353,783
2015	3,051,398	4,174,908	7,226,306	2,636,942	2,513,372	6,678,664	11,828,978	4,509,148	29,643,844	34,152,992
2016	3,038,017	4,170,638	7,208,655	2,603,463	2,469,338	6,473,332	11,546,133	4,479,218	29,587,412	34,066,630
2017	3,023,431	4,170,491	7,193,922	2,571,372	2,438,258	6,356,813	11,366,443	4,458,962	29,548,555	34,007,517
2018	2,954,815	4,172,271	7,127,086	2,534,407	2,401,500	6,244,436	11,180,343	4,451,377	29,532,680	33,984,057
2019	2,921,043	4,172,609	7,093,652	2,496,243	2,366,042	6,142,653	11,004,938	4,448,066	29,525,175	33,973,241
2020	2,921,098	4,167,385	7,088,483	2,464,070	2,334,407	6,063,930	10,862,407	4,422,123	29,476,506	33,898,629
2021	2,917,049	4,164,409	7,081,458	2,451,441	2,322,503	6,036,098	10,810,042	4,407,487	29,448,731	33,856,218
2022	2,920,450	4,168,541	7,088,991	2,464,331	2,333,907	6,061,183	10,859,421	4,424,907	29,479,196	33,904,103
2023	2,920,793	4,138,341	7,059,134	2,467,280	2,336,518	6,065,705	10,869,503	4,430,201	29,488,040	33,918,241
2024	2,914,716	4,133,995	7,048,711	2,457,690	2,327,634	6,044,012	10,829,336	4,417,914	29,464,843	33,882,757
2025	2,904,267	4,128,821	7,033,088	2,451,855	2,321,796	6,029,352	10,803,003	4,408,888	29,447,804	33,856,692
2026	2,893,757	4,119,214	7,012,971	2,434,458	2,305,881	5,991,260	10,731,599	4,280,119	29,208,799	33,488,918
2027	2,892,457	4,116,378	7,008,835	2,437,373	2,308,358	5,995,786	10,741,517	4,284,611	29,213,514	33,498,125
2028	2,887,960	4,111,228	6,999,188	2,431,510	2,302,860	5,981,368	10,715,738	4,274,442	29,191,514	33,465,956
2029	2,883,728	4,106,458	6,990,186	2,425,909	2,297,694	5,968,162	10,691,765	4,270,720	29,181,408	33,452,128
2030	2,869,588	4,088,226	6,957,814	2,411,115	2,284,112	5,935,387	10,630,614	4,252,952	29,144,609	33,397,561
2031	2,859,202	4,071,237	6,930,439	2,413,035	2,285,788	5,938,951	10,637,774	4,259,350	29,142,187	33,401,537
2032	2,842,448	4,047,236	6,889,684	2,400,144	2,273,970	5,910,525	10,584,639	4,240,648	29,113,219	33,353,867
2033	2,819,727	4,007,436	6,827,163	2,414,690	2,287,194	5,941,650	10,643,534	4,260,328	29,152,457	33,412,785
2034	2,752,301	3,931,384	6,683,685	2,397,808	2,271,517	5,902,986	10,572,311	4,245,570	29,122,634	33,368,204
2035	2,624,091	3,792,652	6,416,743	2,394,699	2,268,614	5,895,251	10,558,564	4,249,988	29,128,351	33,378,339
Total	147,158,358	196,650,078	343,808,436	142,920,049	140,059,518	400,886,981	683,866,548	182,423,964	1,195,788,702	1,378,212,666

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	2,727	0	0	0	0	0	2,727
1965	0	0	6,034	73,631	0	0	0	0	79,665
1966	0	0	12,049	137,442	0	0	0	0	149,491
1967	0	0	26,278	267,828	0	0	0	0	294,106
1968	186,021	9,159	54,628	445,749	1,552,420	12,873	11,543	209,236	2,481,629
1969	181,628	8,398	87,622	525,450	2,408,592	11,486	10,543	358,315	3,592,034
1970	203,782	15,163	94,721	574,380	2,934,962	11,613	13,077	294,656	4,142,354
1971	200,278	16,122	95,741	606,288	3,850,107	16,561	14,374	449,839	5,249,310
1972	223,052	16,989	98,838	632,022	5,034,074	14,005	20,617	1,084,794	7,124,391
1973	205,839	13,061	97,599	639,661	4,973,282	14,255	11,675	410,479	6,365,851
1974	286,945	13,030	98,510	698,659	5,281,637	14,348	12,750	600,205	7,006,084
1975	354,818	13,973	106,752	716,021	6,414,263	15,358	14,433	731,442	8,367,060
1976	308,689	14,518	108,134	774,708	6,773,357	15,726	16,099	566,818	8,578,049
1977	270,608	11,628	112,604	798,279	6,955,115	17,173	13,886	513,608	8,692,901
1978	360,045	10,505	115,577	892,026	8,421,202	17,566	17,942	507,505	10,342,368
1979	390,470	14,371	114,309	896,794	9,553,101	18,832	24,851	956,837	11,969,565
1980	412,474	12,733	126,006	890,120	10,128,070	19,406	24,273	728,646	12,341,728
1981	476,178	30,682	133,970	1,081,077	11,579,900	23,595	22,995	914,244	14,262,641
1982	469,492	13,712	135,245	1,005,987	12,410,240	21,549	22,324	750,264	14,828,813
1983	642,103	15,309	149,332	1,027,741	15,619,365	38,474	30,664	428,780	17,951,768
1984	917,513	15,726	164,697	2,066,707	23,799,118	53,123	59,748	787,684	27,864,316
1985	1,119,055	89,018	187,375	2,383,123	28,410,743	68,805	71,250	2,201,544	34,530,913
1986	1,272,800	34,954	181,283	2,374,567	31,079,132	79,496	76,197	2,195,248	37,293,677
1987	1,136,332	51,988	179,649	2,825,292	29,612,914	77,362	75,349	2,263,388	36,222,274
1988	1,115,200	63,593	194,241	2,749,834	29,439,419	72,860	60,197	2,207,521	35,902,865
1989	1,147,360	49,907	188,468	2,434,097	29,435,788	65,515	68,154	2,443,522	35,832,811
1990	1,030,065	35,176	220,971	2,548,301	27,583,709	49,728	49,141	1,875,990	33,393,081
1991	610,792	23,964	219,695	2,055,221	17,745,571	26,407	26,638	1,231,258	21,939,546
1992	956,920	40,321	240,974	2,364,410	25,984,409	54,672	50,725	1,908,462	31,600,893
1993	1,174,633	54,473	266,367	2,805,308	31,701,091	74,510	69,703	2,645,729	38,791,814
1994	1,026,449	44,929	306,239	2,822,452	29,459,092	58,999	57,293	2,122,302	35,897,755
1995	1,513,143	46,994	303,088	3,476,008	36,212,626	88,730	79,189	2,755,482	44,475,260
1996	1,350,120	48,079	372,095	3,299,724	36,106,762	84,712	71,652	4,195,993	45,529,137
1997	1,491,645	25,559	303,117	3,135,530	33,802,767	34,376	72,483	1,668,794	40,534,271
1998	1,615,973	52,516	383,018	3,747,336	38,023,739	92,718	87,968	3,017,483	47,020,751
1999	1,392,159	64,956	379,468	3,527,546	36,167,932	87,209	85,668	2,981,516	44,686,454
2000	1,409,073	80,094	376,479	3,601,653	36,575,310	89,084	86,546	3,016,910	45,235,149
2001	1,316,748	60,769	378,785	3,388,076	34,462,360	83,036	80,845	2,817,062	42,587,681
2002	1,337,465	61,928	379,425	3,439,676	34,934,333	84,570	82,345	2,862,844	43,182,586
2003	1,296,430	59,619	379,485	3,330,199	33,993,227	81,497	79,312	2,771,690	41,991,459
2004	1,345,739	62,387	379,749	3,466,049	35,105,188	85,180	82,904	2,881,038	43,408,234
2005	1,281,988	58,811	379,360	3,286,743	33,669,705	80,425	78,259	2,739,693	41,574,984
2006	1,273,650	58,341	379,337	3,265,044	33,480,850	79,804	77,654	2,721,195	41,335,875
2007	1,282,658	58,848	379,398	3,291,157	33,684,357	80,473	78,307	2,741,165	41,596,363
2008	1,332,866	61,667	379,456	3,415,824	34,822,968	84,233	81,962	2,852,606	43,031,582
2009	1,312,165	60,506	379,374	3,360,435	34,355,006	82,685	80,459	2,806,692	42,437,322
2010	1,327,006	61,337	379,462	3,402,105	34,689,477	83,794	81,536	2,839,597	42,864,314
2011	1,324,516	61,198	379,468	3,396,361	34,632,620	83,609	81,355	2,834,067	42,793,194
2012	1,326,735	61,323	379,490	3,403,254	34,682,254	83,772	81,515	2,838,978	42,857,321
2013	1,223,148	55,497	379,608	3,160,766	32,323,320	76,001	73,969	2,608,920	39,901,229
2014	1,199,289	54,151	377,081	3,116,410	31,773,693	74,201	72,230	2,555,831	39,222,886
2015	1,180,294	53,084	373,789	2,997,892	31,341,451	72,777	70,846	2,513,651	38,603,784
2016	1,174,072	52,733	367,777	2,919,237	31,199,979	72,310	70,391	2,499,836	38,356,335
2017	1,173,707	52,715	353,562	2,789,162	31,191,013	72,283	70,365	2,499,014	38,201,821
2018	1,175,717	52,827	330,860	2,677,639	31,236,465	63,921	70,509	2,503,473	38,111,411
2019	1,175,734	52,829	322,386	2,618,137	31,236,803	63,414	70,511	2,503,514	38,043,328
2020	1,167,754	52,379	320,537	2,563,717	31,056,680	62,567	69,931	2,485,812	37,779,377
2021	1,163,569	52,145	319,425	2,531,361	30,961,878	62,114	69,626	2,476,529	37,636,647
2022	1,169,460	52,475	318,840	2,537,440	31,094,908	62,486	70,054	2,489,593	37,795,256
2023	1,171,006	52,561	318,408	2,536,455	31,130,174	62,572	70,167	2,493,030	37,834,373
2024	1,167,047	52,339	317,869	2,523,554	31,040,771	62,258	69,880	2,484,244	37,717,962
2025	1,164,922	52,218	317,330	2,517,435	30,991,738	62,073	69,725	2,479,518	37,654,959
2026	1,157,704	51,817	317,028	2,495,667	30,828,738	61,498	69,200	2,463,507	37,445,159
2027	1,159,725	51,929	316,391	2,498,215	30,874,480	61,607	69,345	2,467,994	37,499,686
2028	1,158,180	51,843	313,949	2,491,952	30,839,689	61,469	69,232	2,464,565	37,450,879
2029	1,157,330	51,795	313,630	2,486,534	30,820,428	61,342	69,171	2,462,678	37,422,908
2030	1,151,876	51,490	313,315	2,468,560	30,697,336	60,869	68,774	2,450,581	37,262,801
2031	1,155,708	51,703	311,745	2,460,715	30,783,841	60,763	69,053	2,459,079	37,352,607
2032	1,149,338	51,347	311,702	2,445,638	30,639,997	60,303	68,591	2,444,955	37,171,871
2033	1,155,861	51,712	311,400	2,458,542	30,787,292	60,654	69,064	2,459,419	37,353,944
2034	1,151,568	51,472	310,762	2,440,490	30,690,406	60,193	68,753	2,449,905	37,223,549
2035	1,153,607	51,587	310,040	2,436,992	30,736,473	60,112	68,901	2,454,422	37,272,134
Total	68,066,236	2,982,982	18,344,123	161,518,405	1,761,819,707	3,911,991	4,004,688	139,901,191	2,160,549,323

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley- East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,350	0	0	0	0	0	0	0	51,775	0
1964	62,920	27,471	14,440	4,374	37,191	1,144	28,462	8,212	82,882	35,018
1965	118,700	53,051	25,116	7,200	40,804	2,084	50,360	15,235	135,181	35,373
1966	215,956	101,346	44,767	12,489	73,212	3,757	90,473	27,701	232,692	61,514
1967	417,814	210,983	86,188	23,491	141,524	7,291	175,317	54,067	433,698	115,666
1968	736,544	478,474	152,802	41,540	251,383	12,879	310,927	95,534	782,746	209,081
1969	1,059,784	724,789	225,475	61,271	371,232	18,707	458,450	138,164	1,206,738	321,996
1970	1,378,036	904,785	315,497	89,765	519,703	25,248	632,482	184,974	1,779,532	467,926
1971	1,705,584	1,088,695	432,866	128,457	713,268	31,859	856,465	231,446	2,540,122	659,906
1972	2,022,473	1,307,477	561,993	181,315	926,232	42,430	1,110,398	274,781	3,390,963	865,668
1973	2,112,703	1,323,450	696,314	183,824	1,137,734	43,508	1,173,250	287,501	3,973,878	947,285
1974	2,176,242	1,382,826	711,828	193,398	1,164,585	45,239	1,205,022	292,257	4,000,919	991,250
1975	2,352,806	1,450,705	752,741	206,162	1,232,395	48,518	1,271,600	304,469	4,161,569	1,091,737
1976	2,705,849	1,445,981	799,288	215,206	1,308,073	51,489	1,313,989	313,876	4,302,131	1,145,707
1977	2,648,528	1,514,963	695,104	226,157	1,145,765	47,371	1,385,499	329,557	4,556,407	1,209,858
1978	2,969,156	1,600,058	877,082	231,304	1,422,776	47,159	1,385,254	321,879	4,463,628	1,213,742
1979	3,523,919	1,634,221	944,666	238,198	1,520,952	48,439	1,512,801	332,682	4,424,998	1,153,234
1980	4,072,262	1,715,874	1,034,247	259,679	1,682,561	53,393	1,631,846	360,675	4,838,494	1,270,305
1981	4,391,821	1,960,824	1,103,149	271,120	1,796,886	77,788	1,749,899	391,765	5,223,050	1,357,362
1982	3,955,775	2,061,054	1,155,293	280,476	1,883,325	56,020	1,947,322	407,321	5,415,434	1,565,513
1983	5,149,592	2,340,649	1,746,910	333,375	2,830,055	69,441	2,021,441	495,104	6,026,479	1,558,109
1984	7,187,781	3,409,455	2,830,627	445,960	4,559,142	75,852	2,253,133	553,899	7,058,896	2,335,270
1985	8,961,698	3,745,356	3,631,592	542,615	5,841,979	79,927	2,377,548	737,897	7,780,555	2,389,438
1986	8,809,515	4,321,558	4,052,943	578,610	6,523,295	102,700	2,468,130	1,002,337	7,878,486	3,053,822
1987	8,773,560	4,144,879	3,899,058	603,456	6,356,317	211,241	2,484,597	1,022,557	9,196,324	3,027,441
1988	8,311,019	4,229,744	3,912,683	618,442	6,444,635	125,185	2,571,469	783,369	9,550,137	2,841,732
1989	8,685,278	4,107,763	3,557,359	589,232	5,915,617	171,118	2,519,809	1,446,656	8,997,868	2,945,997
1990	9,937,758	4,533,389	4,222,094	621,350	6,962,907	289,366	2,703,022	1,639,341	9,838,967	3,690,382
1991	6,461,561	3,260,357	2,734,544	570,238	4,509,404	175,264	3,477,260	1,297,173	9,011,787	3,060,036
1992	8,538,261	4,475,641	2,803,065	473,550	4,622,312	121,471	4,277,709	1,129,023	8,689,023	3,005,964
1993	9,009,109	4,103,463	3,033,246	478,470	5,002,003	159,230	4,186,836	1,359,926	9,670,114	3,378,324
1994	11,113,309	4,706,111	3,076,188	566,656	5,072,618	225,873	5,210,070	1,698,734	10,751,320	4,219,712
1995	10,599,840	5,019,592	3,778,608	517,368	6,321,547	157,182	4,248,408	1,508,311	9,897,514	3,805,084
1996	10,784,381	5,031,124	6,469,068	517,098	10,668,801	147,704	4,091,971	1,811,584	10,224,087	3,827,466
1997	11,418,712	4,979,603	6,477,540	588,885	7,523,527	145,543	4,838,862	1,877,893	11,843,855	4,197,760
1998	14,101,630	5,948,935	8,125,833	805,439	8,777,586	379,351	7,326,948	2,482,012	15,295,092	4,935,505
1999	13,746,584	5,902,141	3,821,406	750,701	6,301,958	344,144	7,490,968	2,585,705	16,755,168	4,815,875
2000	14,361,213	6,205,656	3,893,194	757,712	4,526,871	352,801	7,582,140	2,642,747	18,040,367	4,412,017
2001	13,807,293	5,985,292	3,622,615	722,882	4,098,441	327,527	7,299,159	2,452,450	17,413,159	4,212,989
2002	14,415,919	6,394,071	3,710,865	726,041	6,119,632	335,300	7,380,501	2,510,873	17,871,094	4,230,720
2003	14,098,615	6,345,116	3,490,140	767,206	5,755,594	323,682	7,231,408	2,412,028	20,529,192	5,090,881
2004	15,175,088	6,916,374	3,679,714	764,073	6,068,242	342,784	8,015,371	2,555,611	20,706,890	5,212,267
2005	14,567,731	6,667,401	3,408,359	784,231	5,620,699	317,978	8,213,644	2,369,181	19,948,092	4,951,205
2006	14,800,400	6,755,839	3,368,850	793,150	5,555,540	314,852	8,678,493	2,345,688	19,742,028	4,896,650
2007	15,333,728	7,060,067	3,396,292	803,320	5,600,791	318,461	9,268,809	2,372,806	19,650,267	4,893,895
2008	16,606,152	7,560,504	3,644,880	873,075	6,010,809	337,581	10,229,497	2,516,587	21,028,470	5,251,263
2009	16,679,890	7,308,160	3,529,057	854,709	5,819,762	329,621	10,596,353	2,456,750	20,137,834	5,041,743
2010	17,427,656	7,487,724	3,612,304	891,311	5,957,087	335,363	11,309,964	2,499,903	20,840,371	5,203,136
2011	17,871,526	7,458,951	3,591,910	896,297	5,923,432	334,431	11,847,068	2,492,909	20,543,705	5,142,038
2012	18,431,828	7,475,192	3,615,178	934,853	5,961,823	335,317	12,439,922	2,499,559	20,890,491	5,213,181
2013	16,691,927	6,492,367	3,135,719	859,635	5,157,687	296,006	11,594,305	2,203,787	18,473,448	4,561,522
2014	16,583,837	6,237,100	3,016,253	857,141	4,974,595	285,852	11,742,854	2,127,777	18,045,688	4,434,473
2015	16,183,284	6,015,272	2,932,837	869,336	4,837,025	277,587	11,424,528	2,065,634	17,885,857	4,367,015
2016	15,949,670	5,922,340	2,865,774	842,982	4,726,404	273,648	11,273,159	2,036,125	17,189,216	4,214,518
2017	15,737,263	5,808,867	2,839,233	866,560	4,682,644	269,944	11,131,985	2,008,459	17,411,471	4,240,732
2018	15,539,138	5,624,455	2,782,446	847,685	4,588,976	266,368	10,980,215	1,982,110	16,864,510	4,117,508
2019	15,235,671	5,419,393	2,715,760	841,759	4,479,000	260,873	10,784,482	1,941,965	16,493,930	4,016,611
2020	14,755,623	5,180,019	2,612,123	832,056	4,308,089	251,634	10,454,259	1,874,918	16,055,373	3,887,312
2021	14,409,395	4,978,970	2,476,925	781,826	4,085,093	244,722	10,160,427	1,826,145	14,960,114	3,628,571
2022	14,416,445	4,926,917	2,462,370	795,377	4,061,109	244,565	10,123,040	1,825,784	14,989,064	3,623,230
2023	14,395,275	4,930,440	2,455,519	803,220	4,049,817	244,061	10,099,841	1,822,484	14,949,534	3,609,361
2024	14,288,685	4,836,298	2,399,071	762,114	3,956,699	242,264	10,026,288	1,809,057	14,070,340	3,429,034
2025	14,220,064	4,807,351	2,420,243	818,099	3,991,645	241,094	9,965,812	1,800,361	14,928,323	3,586,522
2026	14,039,874	4,720,227	2,342,188	765,246	3,862,881	238,058	9,835,179	1,777,689	13,882,366	3,365,638
2027	14,074,671	4,731,608	2,352,507	782,638	3,879,909	238,621	9,848,640	1,781,981	14,116,447	3,409,864
2028	14,024,645	4,695,594	2,348,052	794,927	3,872,572	237,768	9,808,382	1,775,622	14,270,789	3,433,960
2029	13,986,806	4,668,932	2,338,714	794,563	3,857,160	237,125	9,783,802	1,770,842	14,193,373	3,416,094
2030	13,842,507	4,558,914	2,294,456	771,815	3,784,162	234,724	9,691,434	1,752,796	13,717,171	3,312,553
2031	13,842,480	4,510,576	2,313,810	799,372	3,816,104	234,657	9,692,986	1,752,433	14,178,609	3,402,054
2032	13,700,396	4,406,601	2,259,940	760,336	3,727,235	232,287	9,605,040	1,734,632	13,458,137	3,251,394
2033	13,768,106	4,444,005	2,308,406	807,778	3,807,194	233,399	9,664,640	1,743,025	14,274,014	3,415,739
2034	13,563,332	4,366,756	2,235,701	757,574	3,687,266	229,971	9,553,260	1,717,301	13,346,737	3,219,148
2035	13,536,362	4,339,621	2,255,579	790,536	3,720,069	229,419	9,550,879	1,714,001	13,917,213	3,326,645
Total	740,612,305	301,489,757	183,528,604	41,628,306	290,535,362	13,695,260	439,725,763	102,775,637	833,476,193	220,827,541

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	55,537
1963	0	691,434	0	776,559	0	0	0	0	55,786	1,622,881
1964	21,755	1,261,586	9,385	1,594,840	0	0	0	0	84,035	2,779,303
1965	21,884	2,182,391	17,781	2,705,160	0	0	405	405	129,109	4,767,500
1966	37,995	3,903,336	33,453	4,838,691	0	0	565	565	148,449	7,333,637
1967	71,340	7,699,872	68,210	9,505,461	0	0	563	563	204,794	12,702,977
1968	129,009	15,329,328	142,909	18,673,156	0	0	565	565	279,427	24,743,181
1969	198,915	23,170,457	215,370	28,171,348	0	0	3,194	3,194	349,372	35,796,215
1970	289,850	30,640,208	273,809	37,501,815	0	0	15,133	15,133	386,449	45,912,681
1971	409,633	39,988,569	342,678	49,129,548	0	0	16,014	16,014	376,010	58,538,718
1972	537,543	52,983,568	422,584	64,627,425	0	0	17,386	17,386	401,525	76,318,419
1973	588,339	57,309,977	435,937	70,213,700	0	0	17,348	17,348	376,003	80,993,328
1974	611,809	61,814,827	455,858	75,046,060	0	0	17,491	17,491	398,980	86,719,862
1975	645,017	66,795,888	478,701	80,792,308	0	0	18,419	18,419	408,199	93,877,834
1976	668,718	68,524,842	475,889	83,271,038	0	0	17,490	17,490	430,790	97,249,622
1977	696,926	66,274,515	507,369	81,238,019	0	0	18,246	18,246	423,530	95,300,590
1978	709,525	73,034,417	523,601	88,799,581	0	0	17,394	17,394	426,776	104,863,792
1979	713,293	72,750,973	526,743	89,325,119	0	0	20,592	20,592	446,817	107,191,228
1980	778,438	80,023,100	571,517	98,292,391	0	0	17,774	17,774	507,637	117,161,988
1981	805,816	90,898,125	636,360	110,663,965	0	0	21,207	21,207	516,958	131,454,490
1982	854,259	93,196,917	671,117	113,449,826	0	0	28,318	28,318	513,625	135,211,564
1983	953,003	101,866,779	799,218	126,190,155	0	0	16,940	16,940	553,184	151,839,020
1984	1,074,045	138,620,709	869,378	171,274,147	0	0	18,006	18,006	562,134	209,521,338
1985	1,127,584	173,520,888	915,157	211,652,234	0	0	19,963	19,963	682,500	259,203,070
1986	1,153,166	193,564,844	939,679	234,449,085	0	0	19,961	19,961	620,817	285,222,045
1987	1,166,595	178,125,064	899,836	219,910,925	0	0	19,962	19,962	685,010	272,054,642
1988	1,215,189	190,864,233	908,304	232,376,141	0	0	19,969	19,969	709,673	285,579,732
1989	1,203,414	193,855,279	935,223	234,930,613	0	0	20,044	20,044	768,967	288,440,773
1990	1,304,876	239,567,038	1,483,520	286,794,010	0	0	20,061	20,061	821,135	340,210,741
1991	1,370,063	180,587,755	1,143,201	217,658,643	0	0	20,108	20,108	567,171	256,211,261
1992	1,368,943	196,985,601	1,024,893	237,515,456	0	0	20,154	20,154	804,478	287,208,318
1993	1,534,724	170,470,748	1,072,915	213,459,108	0	0	19,912	19,912	966,754	272,724,697
1994	1,589,425	211,987,951	1,009,142	261,227,109	0	0	20,442	20,442	978,057	320,085,013
1995	1,596,779	175,875,951	1,062,497	224,388,681	0	0	20,595	20,595	904,006	292,583,656
1996	1,594,943	180,939,016	1,108,799	237,216,042	0	0	20,755	20,755	941,133	316,184,003
1997	1,796,610	191,453,232	1,119,891	248,261,913	0	0	20,822	20,822	854,868	333,411,200
1998	2,001,488	232,707,181	2,123,018	305,010,018	0	0	20,891	20,891	1,012,943	406,478,473
1999	3,043,178	280,026,349	2,005,902	347,590,079	0	0	20,995	20,995	1,034,128	449,434,314
2000	4,214,409	295,529,371	2,050,889	364,569,387	0	0	21,068	21,068	1,040,388	467,695,055
2001	4,221,861	274,007,636	1,915,548	340,086,852	0	0	21,068	21,068	1,056,026	439,617,156
2002	4,289,322	270,151,841	1,978,088	340,114,267	0	0	21,068	21,068	1,058,135	440,602,297
2003	4,324,981	264,388,132	2,608,245	337,365,220	0	0	21,068	21,068	1,058,196	437,347,439
2004	4,321,588	276,578,055	2,774,475	353,110,532	0	0	21,068	21,068	1,059,103	455,465,074
2005	4,384,992	263,081,704	2,564,594	336,879,811	0	0	21,068	21,068	1,057,775	436,213,102
2006	4,402,949	261,154,667	2,527,364	335,336,470	0	0	21,068	21,068	1,057,693	434,274,707
2007	4,792,057	265,521,481	2,565,890	341,577,864	0	0	21,068	21,068	1,057,903	440,943,653
2008	5,295,490	284,974,322	2,748,996	367,077,626	0	0	21,068	21,068	1,058,106	468,912,379
2009	5,164,582	276,257,898	2,659,431	356,835,790	0	0	21,068	21,068	1,057,820	457,684,530
2010	5,265,996	285,367,349	2,723,298	368,921,462	0	0	21,068	21,068	1,058,126	470,490,573
2011	5,226,540	286,057,823	2,712,930	370,099,560	0	0	21,068	21,068	1,058,141	471,559,002
2012	5,272,535	288,699,162	2,719,321	374,488,362	0	0	21,068	21,068	1,058,220	476,063,231
2013	4,877,670	254,696,799	2,355,513	331,396,385	0	0	21,068	21,068	1,015,457	427,255,796
2014	4,802,180	247,436,432	2,261,976	322,806,158	0	0	21,068	21,068	989,210	417,142,599
2015	4,764,333	241,689,653	2,182,090	315,494,451	0	0	20,663	20,663	959,183	408,286,357
2016	4,667,117	237,681,449	2,148,920	309,791,322	0	0	20,503	20,503	942,231	401,931,809
2017	4,686,837	236,355,919	2,112,835	308,152,749	0	0	20,506	20,506	902,340	399,845,298
2018	4,608,199	230,928,353	2,056,547	301,186,510	0	0	20,503	20,503	826,968	392,436,878
2019	4,545,931	224,314,932	1,986,906	293,037,213	0	0	17,875	17,875	763,041	383,933,288
2020	4,467,651	216,713,141	1,901,729	283,293,927	0	0	5,936	5,936	742,613	373,671,372
2021	4,304,554	205,888,158	1,830,327	269,575,227	0	0	5,109	5,109	738,814	359,703,515
2022	4,302,671	202,305,190	1,813,861	265,889,623	0	0	3,722	3,722	738,277	356,279,393
2023	4,294,266	201,130,919	1,816,877	264,601,614	0	0	3,722	3,722	737,589	355,024,176
2024	4,177,526	195,480,892	1,785,166	257,263,434	0	0	3,720	3,720	737,111	347,483,031
2025	4,282,245	197,072,782	1,775,012	259,909,553	0	0	3,718	3,718	735,731	349,996,744
2026	4,140,203	190,150,761	1,743,481	250,863,791	0	0	3,717	3,717	735,192	340,281,347
2027	4,169,271	192,066,407	1,747,876	253,200,440	0	0	3,714	3,714	734,385	342,686,702
2028	4,186,044	190,512,705	1,736,067	251,697,127	0	0	3,713	3,713	733,280	341,065,881
2029	4,174,784	189,539,843	1,725,788	250,487,826	0	0	3,711	3,711	731,795	339,780,319
2030	4,108,776	184,932,214	1,685,944	244,687,466	0	0	3,710	3,710	730,344	333,670,310
2031	4,167,241	185,402,349	1,668,543	245,781,214	0	0	3,708	3,708	727,391	334,834,670
2032	4,070,352	179,348,061	1,630,919	238,185,330	0	0	3,707	3,707	727,629	326,916,727
2033	4,176,900	183,250,264	1,643,666	243,537,136	0	0	3,706	3,706	726,918	332,505,186
2034	4,050,548	178,543,123	1,616,015	236,886,732	0	0	3,705	3,705	723,166	325,461,352
2035	4,121,429	178,716,673	1,608,452	237,826,878	0	0	3,704	3,704	718,956	326,175,318
Total	195,208,119	12,475,419,408	101,613,423	15,940,535,678	0	0	1,066,776	1,066,776	52,184,482	20,560,223,909

Table B-20A

Calculation of Delta Water Rates

Calculation in accordance with Article 53(i) of the Monterey Amendment

(Values in millions of dollars [$] or millions of acre-feet [AF] discounted to 1998 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 1999						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Project Water Entitlements during the Project Repayment Period.	$3,308.90 b)	207.29 AF	$2,069.90 c)	207.29 AF	$5,378.80	207.29 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period.	(1,208.42)		(403.79)		(1,612.21)	
Less, Delta Water Charges Paid and Project Water Entitlements, Prior to 1999	(1,243.57) d)	(134.17) AF	(799.06)	(134.17) AF	(2,042.63)	(134.17) AF
Total	$856.91	73.12 AF	$867.05	73.12 AF	$1,723.96	73.12 AF
Rate Applicable in 1999	$11.72	per acre-foot	$11.86	per acre-foot	$23.58	per acre-foot

Calculation under original provisions, without the Monterey Amendment

(for Yuba City, Plumas County, Empire, and Ventura)

Procedure	*Capital Cost Component (1)*		*Minimum Operation Maintenance, Power and Replacement Component (a (2)*		*Total Delta Water Rate (3)*	
Commencing in 1999						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Project Water Entitlements during the Project Repayment Period.	$3,300.67 b)	207.29 AF	$2,059.77 c)	207.29 AF	$5,360.44	207.29 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period.	(1,208.42)		(403.79)		(1,612.21)	
Less, Delta Water Charges Paid and Project Water Entitlements, Prior to 1999	(1,243.57) d)	(134.17) AF	(799.06)	(134.17) AF	(2,042.63)	(134.17) AF
Total	$848.681	73.12 AF	$856.92	73.12 AF	$1,705.60	73.12 AF
Rate Applicable in 1999	$11.61	per acre-foot	$11.72	per acre-foot	$23.23	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	27.49	14.49	41.98
Less, Oroville Power Revenues	-16.53	-5.52	-22.05
Subtotal	10.96	8.97	19.93
Delta Facilities (b	7.81	6.69	14.50
California Aqueduct, portion			
Reach 1	1.77	2.71	4.48
Reach 2A	1.05	0.49	1.54
Reach 2B	0.53	0.24	0.77
Reach 3	0.38	0.14	0.52
Subtotal	3.73	3.58	7.31
San Luis Facilities	5.33	3.41	8.74
Planning and preoperating costs through 1997	1.52	0.00	1.52
45,000 AF relinquished costs	0.11	0.14	0.25
Less, Capital Cost Credits	-0.74	0.00	-0.74
Less, Delta Water Charges paid prior to 1999	-17.00	-10.93	-27.93
Rate applicable in 1999	11.72	11.86	23.58

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 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 (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	569,923	888,760	1,458,683
1999	290,688	923,458	1,214,146	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2000	307,662	934,067	1,241,729	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2001	322,161	944,912	1,267,073	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2002	334,421	955,757	1,290,178	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2003	348,920	966,602	1,315,522	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2004	363,065	977,211	1,340,276	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2005	377,210	978,390	1,355,600	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2006	387,820	979,568	1,367,388	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2007	400,786	980,747	1,381,533	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2008	416,110	981,926	1,398,036	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2009	429,077	983,105	1,412,182	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2010	442,044	984,284	1,426,328	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2011	457,368	985,462	1,442,830	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2012	470,334	986,641	1,456,975	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2013	485,658	987,820	1,473,478	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2014	500,983	988,999	1,489,982	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2015	516,307	990,178	1,506,485	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2016	530,452	990,178	1,520,630	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2017	544,598	990,178	1,534,776	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2018	558,743	990,178	1,548,921	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2019	572,888	990,178	1,563,066	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2020	587,034	990,178	1,577,212	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2021	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2022	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2023	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2024	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2025	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2026	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2027	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2028	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2029	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2030	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2031	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2032	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2033	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2034	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
2035	589,391	990,178	1,579,569	1,084,480	990,178	2,357,565	4,432,223	589,391	1,072,362	1,661,753
Total	20,398,051	42,522,505	62,920,556	52,912,638	50,591,430	126,875,835	230,379,903	27,517,130	49,905,400	77,422,530

Table B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipl and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	40,695	10,469	0	0	165,522	3,177	8,073	98,608	326,544
1969	61,267	3,281	0	0	337,686	4,200	8,805	102,478	517,717
1970	104,405	19,950	0	0	964,915	8,645	17,290	228,095	1,343,300
1971	129,596	21,720	0	0	1,377,772	9,412	20,272	264,260	1,823,032
1972	160,756	24,113	0	0	2,175,835	11,253	43,131	905,057	3,320,145
1973	195,541	26,664	0	386,638	2,373,167	13,333	27,553	373,307	3,396,203
1974	224,202	27,909	0	446,545	2,781,595	13,954	29,770	445,138	3,969,113
1975	329,688	27,413	0	481,560	3,041,048	14,620	33,702	827,591	4,755,622
1976	414,245	29,388	0	549,549	3,931,785	15,673	35,966	877,151	5,853,757
1977	312,532	28,195	0	569,545	4,071,218	15,977	40,289	626,210	5,663,966
1978	342,208	31,588	0	674,939	4,950,959	20,006	41,065	666,516	6,727,281
1979	395,523	34,294	0	772,757	5,901,986	22,863	45,725	771,613	7,944,761
1980	555,341	37,679	0	881,371	6,984,026	27,272	70,658	933,481	9,489,828
1981	740,789	54,204	0	1,351,487	11,140,730	41,556	77,692	1,373,168	14,779,626
1982	782,396	57,248	0	1,518,993	12,703,436	47,707	85,873	1,530,443	16,726,096
1983	543,462	38,004	0	1,057,789	9,141,315	35,471	58,273	78,506	10,952,820
1984	580,379	13,572	0	1,333,200	9,741,623	39,893	61,770	756,132	12,526,569
1985	667,740	42,441	0	1,540,611	11,403,920	48,100	69,320	644,383	14,416,515
1986	745,447	45,362	0	1,714,679	12,925,113	55,946	77,115	1,469,725	17,033,387
1987	762,180	44,485	0	1,766,065	13,410,817	59,314	77,108	1,503,601	17,623,570
1988	827,669	46,411	0	1,916,790	14,707,763	61,882	83,540	1,633,680	19,277,735
1989	921,621	49,728	0	2,125,033	16,312,361	66,304	92,825	1,821,693	21,389,565
1990	964,288	50,136	0	1,998,766	17,276,959	66,848	95,259	1,980,383	22,432,639
1991	1,023,374	53,208	0	2,121,239	18,335,590	70,944	101,096	2,101,729	23,807,180
1992	1,169,299	60,795	0	2,727,688	20,646,125	81,061	115,511	2,401,419	27,201,898
1993	1,172,060	60,939	0	2,734,129	20,694,874	81,252	115,784	2,407,089	27,266,127
1994	1,123,198	58,398	0	2,156,809	20,295,455	77,865	110,957	2,306,739	26,129,421
1995	1,202,009	62,497	0	2,803,995	21,223,694	83,328	118,743	2,468,598	27,962,864
1996	534,818	61,441	0	2,756,635	19,492,814	81,921	102,219	2,426,904	25,456,752
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	67,579	0	2,726,511	22,070,376	91,188	129,942	2,701,434	29,003,701
1999	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2000	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2001	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2002	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2003	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2004	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2005	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2006	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2007	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2008	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2009	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2010	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2011	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2012	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2013	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2014	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2015	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2016	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2017	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2018	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2019	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2020	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2021	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2022	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2023	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2024	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2025	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2026	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2027	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2028	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2029	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2030	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2031	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2032	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2033	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2034	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2035	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
Total	66,006,541	3,845,311	0	146,488,207	1,177,228,515	4,850,752	7,096,495	142,775,924	1,548,291,745

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 Valley 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	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2000	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2001	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2002	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2003	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2004	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2005	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2006	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2007	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2008	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2009	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2010	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2011	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2012	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2013	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2014	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2015	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2016	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2017	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2018	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2019	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2020	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2021	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2022	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2023	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2024	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2025	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2026	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2027	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2028	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2029	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2030	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2031	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2032	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2033	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2034	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
2035	3,262,871	1,277,800	544,598	136,739	898,232	54,224	1,787,035	407,859	2,418,862	678,979
Total	158,882,917	64,818,692	27,400,707	6,873,832	45,022,940	2,723,220	82,641,635	20,817,442	124,013,921	34,616,781

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	83,000,196
1997	1	45,548,810	447,746	56,444,591	214,918	27,173	30,223	272,314	0	93,062,362
1998	0	45,855,992	450,529	57,394,940	218,851	27,356	31,537	277,744	0	93,570,308
1999	47,151	47,422,430	466,491	59,403,271	226,326	28,291	33,821	288,438	0	96,994,384
2000	70,727	47,422,430	466,491	59,426,847	226,326	28,291	35,220	289,837	0	97,046,942
2001	94,303	47,422,430	466,491	59,450,423	226,326	648,331	36,620	911,277	0	97,717,302
2002	94,303	47,422,430	466,491	59,450,423	226,326	648,331	38,019	912,676	0	97,741,806
2003	117,878	47,422,430	466,491	59,473,998	226,326	648,331	39,419	914,076	0	97,792,125
2004	141,454	47,422,430	466,491	59,497,574	226,326	648,331	40,818	915,475	0	97,841,854
2005	153,242	47,422,430	466,491	59,509,362	226,326	648,331	42,217	916,874	0	97,870,365
2006	165,030	47,422,430	466,491	59,521,150	226,326	648,331	43,850	918,507	0	97,895,574
2007	176,817	47,422,430	466,491	59,532,937	226,326	648,331	45,483	920,140	0	97,923,139
2008	407,859	47,422,430	466,491	59,763,979	226,326	648,331	47,116	921,773	0	98,172,317
2009	407,859	47,422,430	466,491	59,763,979	226,326	648,331	48,748	923,405	0	98,188,095
2010	407,859	47,422,430	466,491	59,763,979	226,326	648,331	50,381	925,038	0	98,203,874
2011	407,859	47,422,430	466,491	59,763,979	226,326	648,331	52,247	926,904	0	98,222,242
2012	407,859	47,422,430	466,491	59,763,979	226,326	648,331	54,113	928,770	0	98,238,253
2013	407,859	47,422,430	466,491	59,763,979	226,326	648,331	56,212	930,869	0	98,256,855
2014	407,859	47,422,430	466,491	59,763,979	226,326	648,331	58,311	932,968	0	98,275,458
2015	407,859	47,422,430	466,491	59,763,979	226,326	648,331	60,644	935,301	0	98,294,294
2016	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,310,771
2017	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,324,917
2018	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,339,062
2019	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,353,207
2020	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,367,353
2021	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2022	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2023	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2024	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2025	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2026	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2027	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2028	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2029	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2030	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2031	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2032	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2033	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2034	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
2035	407,859	47,422,430	466,491	59,763,979	226,326	648,331	62,976	937,633	0	98,369,710
Total	16,204,080	2,394,853,802	21,915,795	3,000,785,764	10,235,996	23,238,851	2,443,191	35,918,038	0	4,955,718,536

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 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 (8)	Santa Barbara County (9)	Total (10)
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0
1988	29,131	40,505	69,636	25,436	30,176	100,035	155,647	13,126	24,392	37,518
1989	48,804	69,621	118,425	43,343	51,681	170,303	265,327	26,828	49,634	76,462
1990	41,166	60,482	101,648	38,407	51,185	149,440	239,032	27,956	51,795	79,751
1991	63,389	92,401	155,790	62,470	81,991	235,712	380,173	44,887	83,709	128,596
1992	84,320	126,227	210,547	89,247	115,208	325,629	530,084	61,137	113,925	175,062
1993	90,152	137,473	227,625	98,432	125,174	347,457	571,063	67,725	126,662	194,387
1994	91,785	141,222	233,007	102,021	126,216	352,415	580,652	81,420	159,156	240,576
1995	108,311	181,787	290,098	126,000	149,378	416,955	692,333	131,674	270,727	402,401
1996	132,304	232,343	364,647	158,514	180,787	505,043	844,344	242,654	534,448	777,102
1997	252,468	442,322	694,790	318,973	348,586	972,451	1,640,010	264,118	1,576,807	1,840,925
1998	307,685	536,925	844,610	387,638	423,396	1,181,056	1,992,090	327,283	1,932,091	2,259,374
1999	317,047	549,671	866,718	394,465	430,875	1,201,834	2,027,174	328,041	1,952,782	2,280,823
2000	310,796	538,834	849,630	386,688	422,380	1,178,138	1,987,206	321,573	1,914,282	2,235,855
2001	308,371	534,630	843,001	383,671	419,085	1,168,947	1,971,703	319,064	1,899,347	2,218,411
2002	304,994	528,775	833,769	379,470	414,495	1,156,145	1,950,110	315,570	1,878,547	2,194,117
2003	302,843	525,046	827,889	376,793	411,572	1,147,991	1,936,356	313,345	1,865,297	2,178,642
2004	307,148	532,510	839,658	382,150	417,422	1,164,310	1,963,882	317,799	1,891,814	2,209,613
2005	305,325	529,348	834,673	379,881	414,944	1,157,398	1,952,223	315,912	1,880,582	2,196,494
2006	299,032	518,438	817,470	372,052	406,392	1,133,544	1,911,988	309,401	1,841,824	2,151,225
2007	297,856	516,399	814,255	370,588	404,794	1,129,086	1,904,468	308,184	1,834,580	2,142,764
2008	302,458	524,377	826,835	376,314	411,048	1,146,530	1,933,892	312,946	1,862,923	2,175,869
2009	303,097	525,486	828,583	377,109	411,917	1,148,953	1,937,979	313,607	1,866,861	2,180,468
2010	303,736	526,594	830,330	377,904	412,785	1,151,376	1,942,065	314,269	1,870,798	2,185,067
2011	304,422	527,783	832,205	378,758	413,718	1,153,977	1,946,453	314,978	1,875,024	2,190,002
2012	305,053	528,877	833,930	379,543	414,575	1,156,369	1,950,487	315,631	1,878,910	2,194,541
2013	302,759	524,900	827,659	376,689	411,457	1,147,673	1,935,819	313,258	1,864,780	2,178,038
2014	317,173	549,890	867,063	394,622	431,046	1,202,311	2,027,979	328,171	1,953,560	2,281,731
2015	308,063	534,095	842,158	383,287	418,665	1,167,776	1,969,728	318,745	1,897,445	2,216,190
2016	306,997	532,248	839,245	381,962	417,217	1,163,739	1,962,918	317,643	1,890,885	2,208,528
2017	306,835	531,966	838,801	381,760	416,996	1,163,122	1,961,878	317,475	1,889,883	2,207,358
2018	307,270	532,721	839,991	382,301	417,588	1,164,772	1,964,661	317,925	1,892,564	2,210,489
2019	307,374	532,901	840,275	382,431	417,730	1,165,167	1,965,328	318,033	1,893,206	2,211,239
2020	308,257	534,432	842,689	383,529	418,929	1,168,513	1,970,971	318,946	1,898,643	2,217,589
2021	313,677	543,828	857,505	390,272	426,295	1,189,058	2,005,625	324,554	1,932,024	2,256,578
2022	315,754	547,429	863,183	392,856	429,117	1,196,931	2,018,904	326,703	1,944,817	2,271,520
2023	349,788	606,436	956,224	435,202	475,372	1,325,947	2,236,521	361,918	2,154,447	2,516,365
2024	296,517	514,079	810,596	368,923	402,975	1,124,012	1,895,910	306,800	1,826,336	2,133,136
2025	153,659	266,402	420,061	191,180	208,827	582,477	982,484	158,987	946,430	1,105,417
2026	68,933	119,510	188,443	85,765	93,681	261,303	440,749	71,323	424,575	495,898
2027	38,215	66,255	104,470	47,547	51,935	144,863	244,345	39,540	235,378	274,918
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	9,522,964	16,405,168	25,928,132	11,744,193	12,927,610	36,118,758	60,790,561	9,849,149	55,881,890	65,731,039

Table B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0
1988	33,986	1,657	0	67,288	726,501	2,228	2,851	66,748	901,259
1989	59,273	2,785	0	116,689	1,251,452	3,733	4,927	116,736	1,555,595
1990	53,349	2,419	0	287,811	947,351	3,248	4,367	109,118	1,407,663
1991	82,252	3,731	0	359,380	1,564,983	5,035	6,771	168,217	2,190,369
1992	112,566	5,127	0	452,691	2,153,423	6,927	9,285	230,217	2,970,236
1993	119,670	5,459	0	272,449	2,491,672	7,381	9,894	244,813	3,151,338
1994	118,265	5,379	0	244,671	2,485,820	7,300	9,766	241,933	3,113,134
1995	139,227	6,339	0	317,885	2,894,182	8,598	11,490	284,798	3,662,519
1996	169,333	7,703	0	354,341	2,722,241	10,460	13,978	346,366	3,624,422
1997	307,988	14,860	0	682,198	4,979,988	20,164	26,941	666,744	6,698,883
1998	374,309	18,070	0	826,288	5,834,402	24,518	32,747	810,300	7,920,634
1999	380,068	18,020	0	844,090	5,856,234	24,974	33,294	826,928	7,983,608
2000	372,575	17,665	0	827,448	5,740,775	24,482	32,637	810,624	7,826,206
2001	369,668	17,527	0	820,993	5,695,987	24,291	32,383	804,300	7,765,149
2002	365,620	17,335	0	812,002	5,633,611	24,025	32,028	795,492	7,680,113
2003	363,041	17,213	0	806,275	5,593,875	23,855	31,802	789,881	7,625,942
2004	368,202	17,458	0	817,737	5,673,396	24,195	32,254	801,110	7,734,352
2005	366,016	17,354	0	812,882	5,639,712	24,051	32,063	796,354	7,688,432
2006	358,472	16,996	0	796,129	5,523,481	23,555	31,402	779,941	7,529,976
2007	357,062	16,929	0	792,997	5,501,756	23,463	31,279	776,874	7,500,360
2008	362,579	17,191	0	805,249	5,586,755	23,825	31,762	788,876	7,616,237
2009	363,345	17,227	0	806,951	5,598,565	23,875	31,829	790,544	7,632,336
2010	364,112	17,264	0	808,653	5,610,372	23,926	31,896	792,211	7,648,434
2011	364,934	17,303	0	810,479	5,623,044	23,980	31,968	794,000	7,665,708
2012	365,690	17,338	0	812,159	5,634,699	24,029	32,034	795,646	7,681,595
2013	362,940	17,208	0	806,051	5,592,324	23,849	31,794	789,662	7,623,828
2014	380,219	18,027	0	844,426	5,858,567	24,984	33,307	827,257	7,986,787
2015	369,298	17,509	0	820,171	5,690,285	24,267	32,350	803,495	7,757,375
2016	368,021	17,449	0	817,335	5,670,610	24,183	32,239	800,717	7,730,554
2017	367,826	17,440	0	816,902	5,667,607	24,170	32,222	800,293	7,726,460
2018	368,348	17,464	0	818,061	5,675,646	24,204	32,267	801,428	7,737,418
2019	368,473	17,470	0	818,338	5,677,570	24,212	32,278	801,700	7,740,041
2020	369,531	17,521	0	820,689	5,693,876	24,282	32,371	804,002	7,762,272
2021	376,028	17,829	0	835,118	5,793,985	24,709	32,940	818,138	7,898,747
2022	378,518	17,947	0	840,647	5,832,347	24,872	33,158	823,555	7,951,044
2023	419,318	19,881	0	931,260	6,461,011	27,553	36,732	912,325	8,808,080
2024	355,458	16,853	0	789,434	5,477,032	23,357	31,138	773,383	7,466,655
2025	184,203	8,734	0	409,095	2,838,267	12,104	16,136	400,777	3,869,316
2026	82,635	3,918	0	183,523	1,273,267	5,430	7,239	179,791	1,735,803
2027	45,811	2,172	0	101,742	705,881	3,010	4,013	99,674	962,303
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	11,488,229	543,771	0	26,008,527	180,872,552	751,304	1,001,832	24,864,968	245,531,183

Table B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	*Castaic Lake Water Agency (21)*	*Coachella Valley Water District (22)*	*Crestline Lake Arrowhead Water Agency (23)*	*Desert Water Agency (24)*	*Littlerock Creek Irrigation District (25)*	*Mojave Water Agency (26)*	*Palmdale Water District (27)*	*San Bernardino Valley Municipal Water District (28)*	*San Gabriel Valley Municipal Water District (29)*
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0
1988	64,266	57,111	27,032	7,656	44,492	2,154	55,996	16,240	151,182	39,907
1989	205,668	98,720	46,993	13,263	78,104	3,763	97,138	27,981	259,860	69,104
1990	185,010	87,808	42,449	11,905	69,970	3,385	87,327	24,956	231,650	61,851
1991	296,854	140,371	65,947	18,548	108,704	5,236	135,623	38,641	363,310	96,172
1992	402,015	234,421	89,358	25,192	147,297	7,053	183,813	52,160	491,537	130,372
1993	424,871	247,076	93,981	26,566	154,919	7,437	193,361	55,045	517,379	137,298
1994	424,023	247,222	94,502	26,865	155,776	7,431	194,191	54,968	525,394	139,422
1995	500,083	290,999	111,729	31,823	184,169	8,769	229,530	64,852	623,848	165,594
1996	606,387	353,131	135,428	38,635	223,236	10,640	278,178	78,696	760,333	201,821
1997	1,166,191	675,664	259,937	74,132	428,478	20,434	534,121	151,132	1,505,782	386,414
1998	1,404,331	816,180	312,362	91,226	514,893	24,564	1,186,683	181,777	1,805,631	475,746
1999	1,435,098	832,926	320,552	91,463	528,392	25,146	1,116,685	185,982	1,809,388	481,546
2000	1,406,804	816,505	314,232	89,660	517,975	24,650	1,094,669	182,315	1,773,715	472,052
2001	1,395,829	810,134	311,781	88,960	513,933	24,458	1,086,129	180,893	1,759,877	468,369
2002	1,380,543	801,263	308,366	87,986	508,305	24,190	1,074,235	178,912	1,740,604	463,240
2003	1,370,806	795,611	306,191	87,366	504,720	24,020	1,066,658	177,650	1,728,327	459,973
2004	1,390,293	806,921	310,544	88,608	511,895	24,361	1,081,821	180,175	1,752,897	466,512
2005	1,382,038	802,130	308,700	88,081	508,856	24,216	1,075,398	179,106	1,742,489	463,742
2006	1,353,555	785,599	302,338	86,266	498,369	23,717	1,053,235	175,414	1,706,578	454,184
2007	1,348,232	782,509	301,149	85,927	496,409	23,624	1,049,092	174,724	1,699,866	452,398
2008	1,369,061	794,598	305,802	87,254	504,078	23,989	1,065,300	177,424	1,726,127	459,387
2009	1,371,955	796,278	306,448	87,439	505,143	24,040	1,067,552	177,799	1,729,776	460,358
2010	1,374,849	797,958	307,094	87,623	506,209	24,090	1,069,804	178,174	1,733,425	461,329
2011	1,377,954	799,760	307,788	87,821	507,352	24,145	1,072,220	178,576	1,737,340	462,371
2012	1,380,810	801,417	308,426	88,003	508,404	24,195	1,074,442	178,946	1,740,941	463,330
2013	1,370,426	795,391	306,106	87,341	504,580	24,013	1,066,362	177,601	1,727,848	459,845
2014	1,435,670	833,258	320,680	91,500	528,603	25,156	1,117,130	186,056	1,810,108	481,738
2015	1,394,431	809,323	311,468	88,871	513,419	24,434	1,085,042	180,712	1,758,115	467,900
2016	1,389,610	806,525	310,392	88,564	511,644	24,349	1,081,290	180,087	1,752,036	466,283
2017	1,388,874	806,098	310,227	88,517	511,373	24,336	1,080,717	179,992	1,751,108	466,036
2018	1,390,844	807,241	310,667	88,643	512,098	24,371	1,082,250	180,247	1,753,592	466,697
2019	1,391,316	807,515	310,773	88,673	512,272	24,379	1,082,617	180,308	1,754,186	466,855
2020	1,395,312	809,834	311,665	88,927	513,743	24,449	1,085,726	180,826	1,759,224	468,196
2021	1,419,844	824,072	317,145	90,491	522,775	24,879	1,104,815	184,005	1,790,155	476,427
2022	1,429,244	829,529	319,245	91,090	526,237	25,044	1,112,130	185,223	1,802,008	479,582
2023	1,583,302	918,943	353,656	100,909	582,960	27,743	1,232,006	205,188	1,996,245	531,276
2024	1,342,173	778,993	299,796	85,541	494,178	23,518	1,044,378	173,939	1,692,227	450,365
2025	695,531	403,684	155,358	44,328	256,089	12,187	541,210	90,138	876,933	233,385
2026	312,020	181,095	69,695	19,886	114,883	5,467	242,791	40,436	393,398	104,698
2027	172,980	100,397	38,638	11,025	63,690	3,031	134,600	22,417	218,095	58,043
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	43,129,103	24,984,210	9,644,640	2,752,574	15,898,622	757,063	32,316,265	5,599,713	54,452,534	14,469,818

Table B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0
1988	24,019	2,642,354	18,118	3,150,527	1,336	552	853	2,741	0	4,317,328
1989	42,040	4,587,641	34,565	5,564,840	0	918	1,454	2,372	0	7,583,021
1990	38,023	4,037,980	34,994	4,917,308	2,535	800	1,283	4,618	0	6,750,020
1991	59,122	6,259,893	54,115	7,642,536	9,945	1,243	2,027	13,215	0	10,510,679
1992	80,131	8,435,312	72,892	10,351,553	13,671	1,710	2,806	18,187	0	14,255,669
1993	84,371	8,885,273	76,858	10,904,435	14,608	1,827	3,026	19,461	0	15,068,309
1994	85,698	8,926,755	76,794	10,959,041	14,409	1,801	3,070	19,280	0	15,145,690
1995	101,792	10,539,433	90,436	12,943,057	16,957	2,119	3,704	22,780	0	18,013,188
1996	124,074	12,810,361	109,783	15,730,703	20,640	2,580	4,621	27,841	0	21,369,059
1997	52,633	24,525,568	210,384	29,990,870	39,826	4,980	9,074	53,880	0	40,919,358
1998	96,963	29,790,514	254,016	36,954,886	48,405	6,055	11,277	65,737	0	50,037,331
1999	93,017	30,321,877	259,054	37,501,126	49,245	6,155	11,752	67,152	0	50,726,601
2000	91,183	29,724,064	253,947	36,761,771	48,274	6,034	11,520	65,828	0	49,726,496
2001	90,472	29,492,164	251,966	36,474,965	47,897	5,987	11,430	65,314	0	49,338,543
2002	89,481	29,169,198	249,206	36,075,529	47,373	5,921	11,305	64,599	0	48,798,237
2003	88,850	28,963,454	247,449	35,821,075	47,039	5,879	11,225	64,143	0	48,454,047
2004	90,113	29,375,193	250,966	36,330,299	47,707	5,963	11,385	65,055	0	49,142,859
2005	89,578	29,200,787	249,476	36,114,597	47,424	5,928	11,317	64,669	0	48,851,088
2006	87,732	28,598,978	244,335	35,370,300	46,447	5,805	11,084	63,336	0	47,844,295
2007	87,387	28,486,492	243,374	35,231,183	46,264	5,783	11,040	63,087	0	47,656,117
2008	88,737	28,926,592	247,134	35,775,483	46,979	5,872	11,211	64,062	0	48,392,378
2009	88,924	28,987,741	247,656	35,851,109	47,078	5,884	11,235	64,197	0	48,494,672
2010	89,112	29,048,876	248,178	35,926,721	47,177	5,897	11,258	64,332	0	48,596,949
2011	89,313	29,114,483	248,739	36,007,862	47,284	5,910	11,284	64,478	0	48,706,708
2012	89,498	29,174,830	249,254	36,082,496	47,382	5,922	11,307	64,611	0	48,807,660
2013	88,825	28,955,427	247,380	35,811,145	47,026	5,878	11,222	64,126	0	48,440,615
2014	93,054	30,333,952	259,157	37,516,062	49,264	6,158	11,757	67,179	0	50,746,801
2015	90,381	29,462,640	251,713	36,438,449	47,849	5,981	11,419	65,249	0	49,289,149
2016	90,069	29,360,768	250,843	36,312,460	47,684	5,960	11,379	65,023	0	49,118,728
2017	90,021	29,345,221	250,710	36,293,230	47,659	5,957	11,373	64,989	0	49,092,716
2018	90,149	29,386,843	251,066	36,344,708	47,726	5,965	11,389	65,080	0	49,162,347
2019	90,179	29,396,806	251,151	36,357,030	47,742	5,967	11,393	65,102	0	49,179,015
2020	90,438	29,481,234	251,872	36,461,446	47,880	5,985	11,426	65,291	0	49,320,258
2021	92,028	29,999,566	256,300	37,102,502	48,721	6,090	11,627	66,438	0	50,187,395
2022	92,637	30,198,195	257,997	37,348,161	49,044	6,130	11,704	66,878	0	50,519,690
2023	102,623	33,453,236	285,807	41,373,894	54,330	6,791	12,965	74,086	0	55,965,170
2024	86,994	28,358,477	242,280	35,072,859	46,056	5,757	10,991	62,804	0	47,441,960
2025	45,081	14,695,721	125,553	18,175,198	23,867	2,983	5,696	32,546	0	24,585,022
2026	20,224	6,592,605	56,324	8,153,522	10,707	1,338	2,555	14,600	0	11,029,015
2027	11,212	3,654,846	31,225	4,520,199	5,936	742	1,417	8,095	0	6,114,330
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
Total	3,216,178	912,701,350	7,793,067	1,127,715,137	1,467,393	185,207	349,861	2,002,461	0	1,527,698,513

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 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	11,750	43,787	0	55,537	0	0	0
1963	0	0	0	151,050	190,362	449,124	790,536	0	0	0
1964	0	0	0	170,658	277,596	622,888	1,071,142	6,059	20,500	26,559
1965	0	0	0	245,544	404,537	1,159,913	1,809,994	11,426	31,741	43,167
1966	18,080	0	18,080	271,642	421,959	1,414,916	2,108,517	20,183	49,661	69,844
1967	41,609	0	41,609	361,458	548,750	1,865,251	2,775,459	37,976	84,159	122,135
1968	128,726	0	128,726	411,082	633,477	2,180,615	3,225,174	63,524	133,082	196,606
1969	254,848	0	254,848	477,168	583,758	2,300,966	3,361,892	118,158	235,272	353,430
1970	277,683	0	277,683	541,470	640,631	2,790,226	3,972,327	130,874	259,884	390,758
1971	227,611	0	227,611	478,792	675,530	2,809,283	3,963,605	131,689	262,451	394,140
1972	225,117	0	225,117	608,751	822,733	3,030,018	4,461,502	137,448	274,498	411,946
1973	221,231	31,399	252,630	594,479	716,828	3,123,061	4,434,368	134,243	269,331	403,574
1974	240,640	32,973	273,613	634,616	747,270	3,327,298	4,709,184	135,250	271,887	407,137
1975	237,608	36,328	273,936	691,497	793,393	3,216,324	4,701,214	151,573	302,776	454,349
1976	271,444	40,877	312,321	804,080	943,803	3,364,821	5,112,704	260,651	505,756	766,407
1977	293,781	45,140	338,921	771,765	922,543	3,305,746	5,000,054	270,375	527,182	797,557
1978	274,027	49,225	323,252	859,380	936,185	3,715,300	5,510,865	277,017	542,742	819,759
1979	289,639	53,391	343,030	954,220	1,009,905	3,821,778	5,785,903	274,943	542,193	817,136
1980	311,013	86,136	397,149	1,105,897	1,174,256	4,122,274	6,402,427	312,237	595,855	908,092
1981	347,376	112,925	460,301	1,210,825	1,349,448	4,510,636	7,070,909	336,534	651,213	987,747
1982	438,577	141,929	580,506	1,286,163	1,368,616	4,887,263	7,542,042	358,629	739,006	1,097,635
1983	355,022	163,422	518,444	1,163,174	1,261,893	4,947,723	7,372,790	387,491	758,462	1,145,953
1984	467,677	246,884	714,561	1,467,705	1,479,159	6,877,511	9,824,375	439,867	857,741	1,297,608
1985	736,619	386,603	1,123,222	1,965,427	2,230,212	7,810,842	12,006,481	535,813	1,035,622	1,571,435
1986	1,120,716	714,803	1,835,519	1,830,902	2,017,430	8,210,983	12,059,315	568,681	1,098,033	1,666,714
1987	1,773,352	1,583,464	3,356,816	2,324,721	2,508,093	7,994,824	12,827,638	600,456	1,205,274	1,805,730
1988	2,362,903	2,536,148	4,899,051	2,386,607	2,778,384	7,841,656	13,006,647	704,347	1,498,828	2,203,175
1989	2,528,453	3,698,716	6,227,169	2,349,644	2,501,232	7,529,137	12,380,013	804,271	1,876,481	2,680,752
1990	2,901,544	3,853,471	6,755,015	2,801,930	2,934,900	8,373,028	14,109,858	964,738	2,108,072	3,072,810
1991	2,940,891	4,176,657	7,117,548	2,062,111	2,383,105	6,429,428	10,874,644	1,010,704	2,413,704	3,424,408
1992	2,797,711	4,150,135	6,947,846	2,529,276	2,927,398	7,658,962	13,115,636	1,140,783	2,539,437	3,680,220
1993	2,861,266	4,190,113	7,051,379	3,385,260	2,981,040	8,860,905	15,227,205	1,215,928	2,724,214	3,940,142
1994	2,987,500	4,230,388	7,217,888	3,416,482	3,584,476	9,610,691	16,611,649	1,363,162	3,462,552	4,825,714
1995	2,961,096	4,412,423	7,373,519	3,652,002	3,307,243	8,382,382	15,341,627	1,680,609	6,002,891	7,683,500
1996	3,036,778	4,885,492	7,922,270	3,230,119	3,148,759	9,123,136	15,502,014	2,663,889	14,615,398	17,279,287
1997	3,145,040	5,082,706	8,227,746	3,750,808	3,411,823	10,042,570	17,205,201	3,510,271	25,941,740	29,452,011
1998	3,619,191	5,718,057	9,337,248	4,568,119	4,212,156	10,752,204	19,532,479	4,282,171	32,251,969	36,534,140
1999	3,599,586	5,694,907	9,294,493	4,774,740	4,470,010	12,137,371	21,382,121	4,333,715	33,575,166	37,908,881
2000	3,629,285	5,734,734	9,364,019	4,822,144	4,411,564	12,248,589	21,482,297	4,376,550	34,014,593	38,391,143
2001	3,639,077	5,719,917	9,358,994	4,671,756	4,303,483	11,935,332	20,910,571	4,345,274	33,644,854	37,990,128
2002	3,674,692	5,735,427	9,410,119	4,714,996	4,335,410	12,027,765	21,078,171	4,354,731	33,745,370	38,100,101
2003	3,660,578	5,744,034	9,404,612	4,552,964	4,422,170	11,673,192	20,648,326	5,840,681	33,370,262	39,210,943
2004	3,713,272	5,802,642	9,515,914	4,670,835	4,530,760	11,934,181	21,135,776	5,993,428	33,668,424	39,661,852
2005	3,706,537	5,758,915	9,465,452	4,523,360	4,395,688	11,611,492	20,530,540	5,803,735	33,312,703	39,116,438
2006	3,714,297	5,743,623	9,457,920	4,496,329	4,369,605	11,545,885	20,411,819	5,770,593	33,225,316	38,995,909
2007	3,741,660	5,748,642	9,490,302	4,513,936	4,385,421	11,582,905	20,482,262	5,793,139	33,261,748	39,054,887
2008	3,801,344	5,795,684	9,597,028	4,637,105	4,498,911	11,855,677	20,991,693	5,966,539	33,597,345	39,563,884
2009	3,813,875	5,784,053	9,597,928	4,590,364	4,456,374	11,754,741	20,801,479	5,902,800	33,483,511	39,386,311
2010	3,846,660	5,796,822	9,643,482	4,625,078	4,488,209	11,830,921	20,944,208	5,947,486	33,568,193	39,515,679
2011	3,873,924	5,797,922	9,671,846	4,620,115	4,483,834	11,820,877	20,924,826	5,939,396	33,556,437	39,495,833
2012	3,899,743	5,802,068	9,701,811	4,625,905	4,489,261	11,834,162	20,949,328	5,945,897	33,571,133	39,517,030
2013	3,852,099	5,721,069	9,573,168	4,271,719	4,160,994	10,936,909	19,369,622	5,584,050	32,903,787	38,487,837
2014	3,873,413	5,727,589	9,601,002	4,198,030	4,063,866	10,703,843	18,965,739	5,497,437	32,799,830	38,297,267
2015	3,875,768	5,699,181	9,574,949	4,104,709	3,922,215	10,204,005	18,230,929	5,417,284	32,613,651	38,030,935
2016	3,875,466	5,693,064	9,568,530	4,069,905	3,876,733	9,994,636	17,941,274	5,386,252	32,550,659	37,936,911
2017	3,874,864	5,692,635	9,567,499	4,037,612	3,845,432	9,877,500	17,760,544	5,365,828	32,510,800	37,876,628
2018	3,820,828	5,695,170	9,515,998	4,001,188	3,809,266	9,766,773	17,577,227	5,358,693	32,497,606	37,856,299
2019	3,801,305	5,695,688	9,496,993	3,963,154	3,773,950	9,665,385	17,402,489	5,355,490	32,490,743	37,846,233
2020	3,816,389	5,691,995	9,508,384	3,932,079	3,743,514	9,590,008	17,265,601	5,330,460	32,447,511	37,777,971
2021	3,820,117	5,698,415	9,518,532	3,926,193	3,738,976	9,582,721	17,247,890	5,321,432	32,453,117	37,774,549
2022	3,825,595	5,706,148	9,531,743	3,941,667	3,753,202	9,615,679	17,310,548	5,341,001	32,496,375	37,837,376
2023	3,859,972	5,734,955	9,594,927	3,986,962	3,802,068	9,749,217	17,538,247	5,381,510	32,714,849	38,096,359
2024	3,800,624	5,638,252	9,438,876	3,911,093	3,720,787	9,525,589	17,157,469	5,314,105	32,363,541	37,677,646
2025	3,647,317	5,385,401	9,032,718	3,727,515	3,520,801	8,969,394	16,217,710	5,157,266	31,466,596	36,623,862
2026	3,552,081	5,228,902	8,780,983	3,604,703	3,389,740	8,610,128	15,604,571	4,940,833	30,705,736	35,646,569
2027	3,520,063	5,172,811	8,692,874	3,569,400	3,350,471	8,498,214	15,418,085	4,913,542	30,521,254	35,434,796
2028	3,477,351	5,101,406	8,578,757	3,515,990	3,293,038	8,338,933	15,147,961	4,863,833	30,263,876	35,127,709
2029	3,473,119	5,096,636	8,569,755	3,510,389	3,287,872	8,325,727	15,123,988	4,860,111	30,253,770	35,113,881
2030	3,458,979	5,078,404	8,537,383	3,495,595	3,274,290	8,292,952	15,062,837	4,842,343	30,216,971	35,059,314
2031	3,448,593	5,061,415	8,510,008	3,497,515	3,275,966	8,296,516	15,069,997	4,848,741	30,214,549	35,063,290
2032	3,431,839	5,037,414	8,469,253	3,484,624	3,264,148	8,268,090	15,016,862	4,830,039	30,185,581	35,015,620
2033	3,409,118	4,997,614	8,406,732	3,499,170	3,277,372	8,299,215	15,075,757	4,849,719	30,224,819	35,074,538
2034	3,341,692	4,921,562	8,263,254	3,482,288	3,261,695	8,260,551	15,004,534	4,834,961	30,194,996	35,029,957
2035	3,213,482	4,782,830	7,996,312	3,479,179	3,258,792	8,252,816	14,990,787	4,839,379	30,200,713	35,040,092
Total	177,079,373	255,577,751	432,657,124	207,576,880	203,578,558	563,881,574	975,037,012	219,790,243	1,301,575,992	1,521,366,235

Table B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	2,727	0	0	0	0	0	2,727
1965	0	0	6,034	73,631	0	0	0	0	79,665
1966	0	0	12,049	137,442	0	0	0	0	149,491
1967	0	0	26,278	267,828	0	0	0	0	294,106
1968	226,716	19,628	54,628	445,749	1,717,942	16,050	19,616	307,844	2,808,173
1969	242,895	11,679	87,622	525,450	2,746,278	15,686	19,348	460,793	4,109,751
1970	308,187	35,113	94,721	574,380	3,899,877	20,258	30,367	522,751	5,485,654
1971	329,874	37,842	95,741	606,288	5,227,879	25,973	34,646	714,099	7,072,342
1972	383,808	41,102	98,838	632,022	7,209,909	25,258	63,748	1,989,851	10,444,536
1973	401,380	39,725	97,599	1,026,299	7,346,449	27,588	39,228	783,786	9,762,054
1974	511,147	40,939	98,510	1,145,204	8,063,232	28,302	42,520	1,045,343	10,975,197
1975	684,506	41,386	106,752	1,197,581	9,455,311	29,978	48,135	1,559,033	13,122,682
1976	722,934	43,906	108,134	1,324,257	10,705,142	31,399	52,065	1,443,969	14,431,806
1977	583,140	39,823	112,604	1,367,824	11,026,333	33,150	54,175	1,139,818	14,356,867
1978	702,253	42,093	115,577	1,566,965	13,372,161	37,572	59,007	1,174,021	17,069,649
1979	785,993	48,665	114,309	1,669,551	15,455,087	41,695	70,576	1,728,450	19,914,326
1980	967,815	50,412	126,006	1,771,491	17,112,096	46,678	94,931	1,662,127	21,831,556
1981	1,216,967	84,886	133,970	2,432,564	22,720,630	65,151	100,687	2,287,412	29,042,267
1982	1,251,888	70,960	135,245	2,524,980	25,113,676	69,256	108,197	2,280,707	31,554,909
1983	1,185,565	53,313	149,332	2,085,530	24,760,680	73,945	88,937	507,286	28,904,588
1984	1,497,892	29,298	164,697	3,399,907	33,540,741	93,016	121,518	1,543,816	40,390,885
1985	1,786,795	131,459	187,375	3,923,734	39,814,663	116,905	140,570	2,845,927	48,947,428
1986	2,018,247	80,316	181,283	4,089,246	44,004,245	135,442	153,312	3,664,973	54,327,064
1987	1,898,512	96,473	179,649	4,591,357	43,023,731	136,676	152,457	3,766,989	53,845,844
1988	1,976,855	111,661	194,241	4,733,912	44,873,683	136,970	146,588	3,907,949	56,081,859
1989	2,128,254	102,420	188,468	4,675,819	46,999,601	135,552	165,906	4,381,951	58,777,971
1990	2,047,702	87,731	220,971	4,834,878	45,808,019	119,824	148,767	3,965,491	57,233,383
1991	1,716,418	80,903	219,695	4,535,840	37,646,144	102,386	134,505	3,501,204	47,937,095
1992	2,238,785	106,243	240,974	5,544,789	48,783,957	142,660	175,521	4,540,098	61,773,027
1993	2,466,363	120,871	266,367	5,811,886	54,887,637	163,143	195,381	5,297,631	69,209,279
1994	2,267,912	108,706	306,239	5,223,932	52,240,367	144,164	178,016	4,670,974	65,140,310
1995	2,854,379	115,830	303,088	6,597,888	60,330,502	180,656	209,422	5,508,878	76,100,643
1996	2,054,271	117,223	372,095	6,410,700	58,321,817	177,093	187,849	6,969,263	74,610,311
1997	3,008,154	107,581	303,117	6,865,636	60,931,728	145,116	228,496	5,018,876	76,608,704
1998	3,206,953	138,165	383,018	7,300,135	65,928,517	208,424	250,657	6,529,217	83,945,086
1999	3,030,460	152,950	379,468	7,191,284	64,848,465	206,486	253,343	6,602,159	82,664,615
2000	3,039,881	167,733	376,479	7,248,749	65,140,384	207,869	253,564	6,621,249	83,055,908
2001	2,944,649	148,270	378,785	7,028,717	62,982,646	201,630	247,609	6,415,077	80,347,383
2002	2,961,318	149,237	379,425	7,071,326	63,392,243	202,898	248,754	6,452,051	80,857,252
2003	2,917,704	146,806	379,485	6,956,122	62,411,401	199,655	245,495	6,355,286	79,611,954
2004	2,972,174	149,819	379,749	7,103,434	63,602,883	203,678	249,539	6,475,863	81,137,139
2005	2,906,237	146,139	379,360	6,919,273	62,133,716	198,779	244,703	6,329,762	79,257,969
2006	2,890,355	145,311	379,337	6,880,821	61,828,630	197,662	243,437	6,294,851	78,860,404
2007	2,897,953	145,751	379,398	6,903,802	62,010,412	198,239	243,967	6,311,754	79,091,276
2008	2,953,678	148,832	379,456	7,040,721	63,234,022	202,361	248,105	6,435,197	80,642,372
2009	2,933,743	147,707	379,374	6,987,034	62,777,870	200,863	246,669	6,390,951	80,064,211
2010	2,949,351	148,575	379,462	7,030,406	63,124,148	202,023	247,813	6,425,523	80,507,301
2011	2,947,683	148,475	379,468	7,026,488	63,079,963	201,892	247,704	6,421,782	80,453,455
2012	2,950,658	148,635	379,490	7,035,061	63,141,252	202,104	247,930	6,428,339	80,533,469
2013	2,844,321	142,679	379,608	6,786,465	60,739,943	194,153	240,144	6,192,297	77,519,610
2014	2,837,741	142,152	377,081	6,780,484	60,456,559	193,488	239,918	6,176,803	77,204,226
2015	2,807,825	140,567	373,789	6,637,711	59,856,035	191,347	237,577	6,110,861	76,355,712
2016	2,800,326	140,156	367,777	6,556,220	59,694,888	190,796	237,011	6,094,268	76,081,442
2017	2,799,766	140,129	353,562	6,425,712	59,682,919	190,756	236,968	6,093,022	75,922,834
2018	2,802,298	140,265	330,860	6,315,348	59,736,410	182,428	237,157	6,098,616	75,843,382
2019	2,802,440	140,273	322,386	6,256,123	59,738,672	181,929	237,170	6,098,929	75,777,922
2020	2,795,518	139,874	320,537	6,204,054	59,574,855	181,152	236,683	6,083,529	75,536,202
2021	2,797,830	139,948	319,425	6,186,127	59,580,162	181,126	236,947	6,088,382	75,529,947
2022	2,806,211	140,396	318,840	6,197,735	59,751,554	181,661	237,593	6,106,863	75,740,853
2023	2,848,557	142,416	318,408	6,287,363	60,415,484	184,428	241,280	6,199,070	76,637,006
2024	2,780,738	139,166	317,869	6,132,636	59,342,102	179,918	235,399	6,051,342	75,179,170
2025	2,607,358	130,926	317,330	5,746,178	56,654,304	168,480	220,242	5,674,010	71,518,828
2026	2,498,572	125,709	317,028	5,498,838	54,926,304	161,231	210,820	5,437,013	69,175,515
2027	2,463,769	124,075	316,391	5,419,605	54,404,660	158,920	207,739	5,361,383	68,456,542
2028	2,416,413	121,817	313,949	5,311,600	53,663,988	155,772	203,613	5,258,280	67,445,432
2029	2,415,563	121,769	313,630	5,306,182	53,644,727	155,645	203,552	5,256,393	67,417,461
2030	2,410,109	121,464	313,315	5,288,208	53,521,635	155,172	203,155	5,244,296	67,257,354
2031	2,413,941	121,677	311,745	5,280,363	53,608,140	155,066	203,434	5,252,794	67,347,160
2032	2,407,571	121,321	311,702	5,265,286	53,464,296	154,606	202,972	5,238,670	67,166,424
2033	2,414,094	121,686	311,400	5,278,190	53,611,591	154,957	203,445	5,253,134	67,348,497
2034	2,409,801	121,446	310,762	5,260,138	53,514,705	154,496	203,134	5,243,620	67,218,102
2035	2,411,840	121,561	310,040	5,256,640	53,560,772	154,415	203,282	5,248,137	67,266,687
Total	145,561,006	7,372,064	18,344,123	334,015,139	3,119,920,774	9,514,047	12,103,015	307,542,083	3,954,372,251

Table B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,350	0	0	0	0	0	0	0	51,775	0
1964	62,920	27,471	14,440	4,374	37,191	1,144	28,462	8,212	82,882	35,018
1965	118,700	53,051	25,116	7,200	40,804	2,084	50,360	15,235	135,181	35,373
1966	215,956	101,346	44,767	12,489	73,212	3,757	90,473	27,701	232,692	61,514
1967	417,814	210,983	86,188	23,491	141,524	7,291	175,317	54,067	433,698	115,666
1968	736,544	491,534	152,802	41,540	251,383	12,879	310,927	95,534	782,746	209,081
1969	1,059,784	742,593	225,475	61,271	371,232	18,707	458,450	138,164	1,206,738	321,996
1970	1,378,036	942,690	315,497	89,765	519,703	25,248	632,482	184,974	1,779,532	467,926
1971	1,705,584	1,137,203	432,866	128,457	713,268	31,859	856,465	231,446	2,540,122	659,906
1972	2,183,229	1,382,228	603,790	185,977	990,535	43,797	1,177,916	287,802	3,760,702	950,870
1973	2,334,910	1,430,613	747,866	191,103	1,217,728	46,085	1,268,354	313,632	4,028,786	961,623
1974	2,455,332	1,526,092	771,367	204,189	1,257,615	48,960	1,326,891	331,888	4,466,069	1,105,677
1975	2,672,628	1,617,012	816,705	219,412	1,332,910	53,270	1,412,322	355,458	4,641,302	1,211,442
1976	3,136,867	1,653,654	873,737	232,251	1,425,623	57,758	1,488,355	381,467	4,840,903	1,282,849
1977	3,118,450	1,741,465	774,248	245,236	1,267,945	54,232	1,575,347	406,812	5,096,817	1,348,955
1978	3,569,336	1,874,877	974,395	255,732	1,570,189	56,846	1,622,167	420,224	5,095,396	1,379,055
1979	4,244,092	1,954,298	1,059,699	268,034	1,692,422	60,328	1,797,441	449,967	5,139,455	1,342,994
1980	4,930,080	2,092,719	1,169,167	295,628	1,893,297	67,649	1,969,023	499,265	5,650,446	1,485,999
1981	5,746,921	2,553,455	1,321,862	328,757	2,140,178	100,734	2,284,712	603,161	6,460,708	1,688,006
1982	5,507,209	2,725,136	1,409,591	346,884	2,284,064	82,355	2,260,379	642,421	6,757,357	1,929,995
1983	6,260,586	2,813,170	1,931,193	381,134	3,121,422	88,443	2,455,958	659,029	6,970,254	1,810,205
1984	7,638,186	3,919,057	3,033,541	498,207	4,880,860	96,571	2,725,415	728,399	8,062,656	2,601,653
1985	9,527,579	4,336,702	3,871,936	604,155	6,223,949	104,401	2,929,282	938,502	8,933,538	2,697,843
1986	9,444,581	4,980,817	4,328,290	648,770	6,961,793	130,522	3,094,124	1,226,122	9,163,739	3,404,621
1987	9,426,010	4,821,055	4,187,189	676,560	6,823,412	240,305	3,132,599	1,251,211	10,516,053	3,392,220
1988	9,086,926	5,029,437	4,259,211	706,854	7,015,123	159,363	3,339,106	1,047,755	11,140,071	3,283,871
1989	10,974,539	5,036,936	3,966,917	693,828	6,598,742	211,182	3,420,879	1,750,792	10,865,592	3,469,281
1990	12,330,435	5,490,226	4,650,592	730,185	7,669,608	331,189	3,639,323	1,953,416	11,766,894	4,233,541
1991	9,213,093	4,362,026	3,210,195	691,655	5,293,854	221,293	4,513,877	1,642,649	11,194,822	3,667,008
1992	11,744,971	5,808,433	3,360,548	616,280	5,541,711	175,134	5,490,991	1,531,770	11,259,763	3,719,972
1993	12,245,298	5,451,503	3,596,457	622,851	5,930,847	213,387	5,412,097	1,766,386	12,271,606	4,100,636
1994	14,231,448	6,008,398	3,620,358	706,426	5,970,055	278,076	6,393,141	2,090,468	13,273,941	4,919,759
1995	13,983,079	6,439,688	4,371,557	670,017	7,299,418	213,865	5,536,207	1,933,557	12,658,731	4,570,641
1996	14,225,228	6,494,282	7,077,589	674,518	11,672,333	205,448	5,410,543	2,244,587	13,085,689	4,619,117
1997	15,718,860	6,882,583	7,260,558	794,353	8,814,749	218,059	6,523,308	2,420,770	15,672,932	5,236,327
1998	18,661,054	8,000,708	8,964,804	1,028,887	10,161,041	456,348	10,241,637	3,058,176	19,439,686	6,067,802
1999	18,444,553	8,012,867	4,686,556	978,903	7,728,582	423,514	10,394,688	3,179,546	20,983,418	5,976,400
2000	19,030,888	8,299,961	4,752,024	984,111	5,943,078	431,675	10,463,844	3,232,921	22,232,944	5,563,048
2001	18,465,993	8,073,226	4,478,994	948,581	5,510,606	406,209	10,172,323	3,041,202	21,591,898	5,360,337
2002	19,059,333	8,473,134	4,563,829	950,766	7,526,169	413,714	10,241,771	3,097,644	22,030,560	5,372,939
2003	18,732,292	8,418,527	4,340,929	991,311	7,158,546	401,926	10,085,101	2,997,537	24,676,381	6,229,833
2004	19,828,252	9,001,095	4,534,856	989,420	7,478,369	421,369	10,884,227	3,143,645	24,878,649	6,357,758
2005	19,212,640	8,747,331	4,261,657	1,009,051	7,027,787	396,418	11,076,077	2,956,146	24,109,443	6,093,926
2006	19,416,826	8,819,238	4,215,786	1,016,155	6,952,141	392,793	11,518,763	2,928,961	23,867,468	6,029,813
2007	19,944,831	9,120,376	4,242,039	1,025,986	6,995,432	396,309	12,104,936	2,955,389	23,768,995	6,025,272
2008	21,238,084	9,632,902	4,495,280	1,097,068	7,413,119	415,794	13,081,832	3,101,870	25,173,459	6,389,629
2009	21,314,716	9,382,238	4,380,103	1,078,887	7,223,137	407,885	13,450,940	3,042,408	24,286,472	6,181,080
2010	22,065,376	9,563,482	4,463,996	1,115,673	7,361,528	413,677	14,166,803	3,085,936	24,992,658	6,343,444
2011	22,512,351	9,536,511	4,444,296	1,120,857	7,329,016	412,800	14,706,323	3,079,344	24,699,907	6,283,388
2012	23,075,509	9,554,409	4,468,202	1,159,595	7,368,459	413,736	15,301,399	3,086,364	25,050,294	6,355,490
2013	21,325,224	8,565,558	3,986,423	1,083,715	6,560,499	374,243	14,447,702	2,789,247	22,620,158	5,700,346
2014	21,282,378	8,348,158	3,881,531	1,085,380	6,401,430	365,232	14,647,019	2,721,692	22,274,658	5,595,190
2015	20,840,586	8,102,395	3,788,903	1,094,946	6,248,676	356,245	14,296,605	2,654,205	22,062,834	5,513,894
2016	20,602,151	8,006,665	3,720,764	1,068,285	6,136,280	352,221	14,141,484	2,624,071	21,360,114	5,359,780
2017	20,389,008	7,892,765	3,694,058	1,091,816	6,092,249	348,504	13,999,737	2,596,310	21,581,441	5,385,747
2018	20,192,853	7,709,496	3,637,711	1,073,067	5,999,306	344,963	13,849,500	2,570,216	21,036,964	5,263,184
2019	19,889,858	7,504,708	3,571,131	1,067,171	5,889,504	339,476	13,654,134	2,530,132	20,666,978	5,162,445
2020	19,413,806	7,267,653	3,468,386	1,057,722	5,720,064	330,307	13,327,020	2,463,603	20,233,459	5,034,487
2021	19,092,110	7,080,842	3,338,668	1,009,056	5,506,100	323,825	13,052,277	2,418,009	19,169,131	4,783,977
2022	19,108,560	7,034,246	3,326,213	1,023,206	5,485,578	323,833	13,022,205	2,418,866	19,209,934	4,781,791
2023	19,241,448	7,127,183	3,353,773	1,040,868	5,531,009	326,028	13,118,882	2,435,531	19,364,641	4,819,616
2024	18,893,729	6,893,091	3,243,465	984,394	5,349,109	320,006	12,857,701	2,390,855	18,181,429	4,558,378
2025	18,178,466	6,488,835	3,120,199	999,166	5,145,966	307,505	12,294,057	2,298,358	18,224,118	4,498,886
2026	17,614,765	6,179,122	2,956,481	921,871	4,875,996	297,749	11,865,005	2,225,984	16,694,626	4,149,315
2027	17,510,522	6,109,805	2,935,743	930,402	4,841,831	295,876	11,770,275	2,212,257	16,753,404	4,146,886
2028	17,287,516	5,973,394	2,892,650	931,666	4,770,804	291,992	11,595,417	2,183,481	16,689,651	4,112,939
2029	17,249,677	5,946,732	2,883,312	931,302	4,755,392	291,349	11,570,837	2,178,701	16,612,235	4,095,073
2030	17,105,378	5,836,714	2,839,054	908,554	4,682,394	288,948	11,478,469	2,160,655	16,136,033	3,991,532
2031	17,105,351	5,788,376	2,858,408	936,111	4,714,336	288,881	11,480,021	2,160,292	16,597,471	4,081,033
2032	16,963,267	5,684,401	2,804,538	897,075	4,625,467	286,511	11,392,075	2,142,491	15,876,999	3,930,373
2033	17,030,977	5,721,805	2,853,004	944,517	4,705,426	287,623	11,451,675	2,150,884	16,692,876	4,094,718
2034	16,826,203	5,644,556	2,780,299	894,313	4,585,498	284,195	11,340,295	2,125,160	15,765,599	3,898,127
2035	16,799,233	5,617,421	2,800,177	927,275	4,618,301	283,643	11,337,914	2,121,860	16,336,075	4,005,624
Total	942,624,325	391,292,659	220,573,951	51,254,712	351,456,924	17,175,543	554,683,663	129,192,792	1,011,942,648	269,914,140

Table B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	55,537
1963	0	691,434	0	776,559	0	0	0	0	55,786	1,622,881
1964	21,755	1,261,586	9,385	1,594,840	0	0	0	0	84,035	2,779,303
1965	21,884	2,182,391	17,781	2,705,160	0	0	405	405	129,109	4,767,500
1966	37,995	3,903,336	33,453	4,838,691	0	0	565	565	148,449	7,333,637
1967	71,340	7,699,872	68,210	9,505,461	0	0	563	563	204,794	12,944,127
1968	129,009	15,329,328	142,909	18,686,216	0	1,050	1,440	2,490	279,427	25,326,812
1969	198,915	23,170,457	215,370	28,189,152	0	1,225	4,123	5,348	349,372	36,623,793
1970	289,850	30,640,208	273,809	37,539,720	0	3,848	17,128	20,976	386,449	48,073,567
1971	409,633	39,988,569	342,678	49,178,056	0	4,546	19,200	23,746	376,010	61,235,510
1972	537,543	55,026,779	422,584	67,553,752	0	4,929	21,164	26,093	401,525	83,524,471
1973	588,339	59,627,870	435,937	73,192,846	0	7,059	21,792	28,851	376,003	88,450,326
1974	611,809	66,046,760	455,858	80,608,507	0	8,336	22,422	30,758	398,980	97,403,376
1975	645,017	71,869,174	478,701	87,325,353	0	9,416	23,536	32,952	408,199	106,318,685
1976	668,718	74,947,009	475,889	91,465,080	0	7,004	23,270	30,274	430,790	112,549,382
1977	696,926	73,378,793	507,369	90,212,595	0	16,917	24,073	40,990	423,530	111,170,514
1978	709,525	82,050,806	523,601	100,102,149	0	12,635	24,238	36,873	426,776	124,289,323
1979	713,293	83,686,165	526,743	102,934,931	0	16,575	28,365	44,940	446,817	130,287,083
1980	862,732	93,125,896	583,913	114,625,814	0	19,834	26,575	46,409	507,637	144,719,084
1981	946,746	111,808,224	672,496	136,655,960	0	21,682	34,577	56,259	516,958	174,790,401
1982	1,022,188	117,195,477	728,365	142,891,421	0	16,117	43,012	59,129	513,625	184,239,267
1983	1,077,151	119,070,086	849,890	147,488,521	0	15,202	27,074	42,276	553,184	186,025,756
1984	1,213,027	157,387,167	933,722	193,718,461	20,590	15,442	28,687	64,719	562,134	246,572,743
1985	1,294,519	195,571,862	1,000,039	238,034,307	24,050	16,976	32,129	73,155	682,500	302,438,528
1986	1,348,222	218,654,502	1,060,644	264,446,747	31,753	18,145	33,418	83,316	620,817	335,039,492
1987	1,374,193	204,220,107	1,048,120	251,109,034	37,071	17,794	33,604	88,469	685,010	323,718,541
1988	1,472,812	222,287,825	1,127,538	269,955,892	48,058	19,117	35,674	102,849	709,673	346,959,146
1989	1,513,984	230,948,296	1,235,003	280,685,971	61,184	20,809	38,074	120,067	768,967	361,640,910
1990	1,632,018	277,221,387	1,852,756	333,501,570	66,041	20,855	38,725	125,621	821,135	415,619,392
1991	1,736,020	222,523,833	1,552,038	269,822,363	180,212	22,526	41,290	244,028	567,171	339,987,257
1992	1,799,661	246,184,242	1,503,088	298,736,564	208,216	26,028	45,657	279,901	804,478	385,337,672
1993	1,970,510	220,215,600	1,556,033	275,353,211	209,613	26,203	46,501	282,317	966,754	372,030,287
1994	2,011,889	260,070,879	1,475,259	321,050,097	201,284	25,161	46,872	273,317	978,057	416,097,032
1995	2,058,965	228,319,058	1,569,574	289,624,357	216,944	27,118	50,339	294,401	904,006	397,322,053
1996	1,719,017	234,945,300	1,628,186	304,001,837	217,250	27,156	52,000	296,406	941,133	420,553,258
1997	1,849,244	261,527,610	1,778,021	334,697,374	254,744	32,153	60,119	347,016	854,868	467,392,920
1998	2,098,451	308,353,687	2,827,563	399,359,844	267,256	33,411	63,705	364,372	1,012,943	550,086,112
1999	3,183,346	357,770,656	2,731,447	444,494,476	275,571	34,446	66,568	376,585	1,034,128	597,155,299
2000	4,376,319	372,675,865	2,771,327	460,758,005	274,600	34,325	67,808	376,733	1,040,388	614,468,493
2001	4,406,636	350,922,230	2,634,005	436,012,240	274,223	654,318	69,118	997,659	1,056,026	586,673,001
2002	4,473,106	346,743,469	2,693,785	435,640,219	273,699	654,252	70,392	998,343	1,058,135	587,142,340
2003	4,531,709	340,774,016	3,322,185	432,660,293	273,365	654,210	71,712	999,287	1,058,196	583,593,611
2004	4,553,155	353,375,678	3,491,932	448,938,405	274,033	654,294	73,271	1,001,598	1,059,103	602,449,787
2005	4,627,812	339,704,921	3,280,561	432,503,770	273,750	654,259	74,602	1,002,611	1,057,775	582,934,555
2006	4,655,711	337,176,075	3,238,190	430,227,920	272,773	654,136	76,002	1,002,911	1,057,693	580,014,576
2007	5,056,261	341,430,403	3,275,755	436,341,984	272,590	654,114	77,591	1,004,295	1,057,903	586,522,909
2008	5,792,086	361,323,344	3,462,621	462,617,088	273,305	654,203	79,395	1,006,903	1,058,106	615,477,074
2009	5,661,365	352,668,069	3,373,578	452,450,878	273,404	654,215	81,051	1,008,670	1,057,820	604,367,297
2010	5,762,967	361,838,655	3,437,967	464,612,162	273,503	654,228	82,707	1,010,438	1,058,126	617,291,396
2011	5,723,712	362,594,736	3,428,160	465,871,401	273,610	654,241	84,599	1,012,450	1,058,141	618,487,952
2012	5,769,892	365,296,422	3,435,066	470,334,837	273,708	654,253	86,488	1,014,449	1,058,220	623,109,144
2013	5,374,354	331,074,656	3,069,384	426,971,509	273,352	654,209	88,502	1,016,063	1,015,457	573,953,266
2014	5,303,093	325,192,814	2,987,624	420,086,199	275,590	654,489	91,136	1,021,215	989,210	566,164,858
2015	5,262,573	318,574,723	2,900,294	411,696,879	274,175	654,312	92,726	1,021,213	959,183	555,869,800
2016	5,165,045	314,464,647	2,866,254	405,867,761	274,010	654,291	94,858	1,023,159	942,231	549,361,308
2017	5,184,717	313,123,570	2,830,036	404,209,958	273,985	654,288	94,855	1,023,128	902,340	547,262,931
2018	5,106,207	307,737,626	2,774,104	397,295,197	274,052	654,296	94,868	1,023,216	826,968	539,938,287
2019	5,043,969	301,134,168	2,704,548	389,158,222	274,068	654,298	92,244	1,020,610	763,041	531,465,510
2020	4,965,948	293,616,805	2,620,092	379,519,352	274,206	654,316	80,338	1,008,860	742,613	521,358,983
2021	4,804,441	283,310,154	2,553,118	366,441,708	275,047	654,421	79,712	1,009,180	738,814	508,260,620
2022	4,803,167	279,925,815	2,538,349	363,001,763	275,370	654,461	78,402	1,008,233	738,277	505,168,793
2023	4,804,748	282,006,585	2,569,175	365,739,487	280,656	655,122	79,663	1,015,441	737,589	509,359,056
2024	4,672,379	271,261,799	2,493,937	352,100,272	272,382	654,088	77,687	1,004,157	737,111	493,294,701
2025	4,735,185	259,190,933	2,367,056	337,848,730	250,193	651,314	72,390	973,897	735,731	472,951,476
2026	4,568,286	244,165,796	2,266,296	318,781,292	237,033	649,669	69,248	955,950	735,192	449,680,072
2027	4,588,342	243,143,683	2,245,592	317,484,618	232,262	649,073	68,107	949,442	734,385	447,170,742
2028	4,593,903	237,935,135	2,202,558	311,461,106	226,326	648,331	66,689	941,346	733,280	439,435,591
2029	4,582,643	236,962,273	2,192,279	310,251,805	226,326	648,331	66,687	941,344	731,795	438,150,029
2030	4,516,635	232,354,644	2,152,435	304,451,445	226,326	648,331	66,686	941,343	730,344	432,040,020
2031	4,575,100	232,824,779	2,135,034	305,545,193	226,326	648,331	66,684	941,341	727,391	433,204,380
2032	4,478,211	226,770,491	2,097,410	297,949,309	226,326	648,331	66,683	941,340	727,629	425,286,437
2033	4,584,759	230,672,694	2,110,157	303,301,115	226,326	648,331	66,682	941,339	726,918	430,874,896
2034	4,458,407	225,965,553	2,082,506	296,650,711	226,326	648,331	66,681	941,338	723,166	423,831,062
2035	4,529,288	226,139,103	2,074,943	297,590,857	226,326	648,331	66,680	941,337	718,956	424,545,028
Total	214,628,377	15,782,974,560	131,322,285	20,069,036,579	11,703,389	23,424,058	3,859,828	38,987,275	52,184,482	27,043,640,958

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)
	Captial 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	33.03	4.19	37.22
County of Butte	0.00	0.00	0.00	0.00	0.00	14.54	1.85	16.39
Plumas County Flood Control and Water Conservation District	17.60	2.32	0.00	0.00	19.92	21.63	7.05	48.60
Feather River Area	1.22	0.16	0.00	0.00	1.38	18.46	2.64	22.48
North Bay Area								
Napa County Flood Control and Water Conservation District	115.17	38.29	4.49	8.12	166.07	15.79	30.16	212.02
Solano County Water Agency	8.84	3.27	0.46	0.53	13.10	2.51	2.48	18.09
North Bay Area	15.45	5.45	0.71	1.01	22.62	3.33	4.20	30.15
South Bay Area								
Alameda County Flood Control and Water Conservation District, Zone 7	18.03	29.59	9.21	12.99	69.82	22.27	7.23	99.32
Alameda County Water District	20.43	25.42	7.42	11.24	64.51	20.32	7.57	92.40
Santa Clara Valley Water District	18.58	18.56	6.66	9.49	53.29	14.95	6.44	74.68
South Bay Area	18.82	21.50	7.19	10.35	57.86	17.04	6.76	81.66
San Joaquin Valley Area								
County of Kings	4.48	4.04	3.77	4.47	16.76	18.57	3.45	38.78
Dudley Ridge Water District	5.24	4.67	3.16	3.96	17.03	15.52	3.25	35.80
Empire West Side Irrigation District	2.30	3.82	2.43	3.69	12.24	16.46	2.65	31.35
Kern County Water Agency	9.17	9.34	4.81	5.59	28.91	18.48	4.59	51.98
Oak Flat Water District	1.96	2.20	1.96	2.61	8.73	15.10	2.40	26.23
Tulare Lake Basin Water Storage District	5.36	4.81	3.00	4.16	17.33	16.64	3.42	37.39
San Joaquin Valley Area	8.50	8.56	4.52	5.33	26.91	18.11	4.38	49.40
Central Coastal Area								
San Luis Obispo County Flood Control and Water Conservation District	371.79	80.12	15.80	47.79	515.50	47.89	96.96	660.35
Santa Barbara County Flood Control and Water Conservation District	345.54	66.62	20.55	47.06	479.77	38.40	89.34	607.51
Central Coastal Area	353.60	70.76	19.09	47.29	490.74	41.32	91.68	623.74
Southern California Area								
Antelope Valley-East Kern Water Agency	43.48	39.63	28.66	43.25	155.02	30.87	14.55	200.44
Castaic Lake Water Agency	51.37	38.94	25.05	13.14	128.50	24.62	15.68	168.80
Coachella Valley Water District	40.59	35.83	52.70	25.85	154.97	18.60	12.28	185.85
Crestline-Lake Arrowhead Water Agency	116.55	91.84	31.98	49.33	289.70	43.43	34.00	367.13
Desert Water Agency	42.26	37.30	48.11	26.55	154.22	19.15	12.76	186.13
Littlerock Creek Irrigation District	45.53	40.46	30.79	47.35	164.13	31.35	15.11	210.59
Mojave Water Agency	113.46	95.41	24.60	67.53	301.00	53.55	34.53	389.08
Palmdale Water District	49.94	44.85	36.90	51.73	183.42	37.23	16.93	237.58
San Bernardino Valley Municipal Water District	124.53	96.93	26.89	30.32	278.67	41.88	35.76	356.31
San Gabriel Valley Municipal Water District	90.82	72.57	40.29	24.87	228.55	32.44	26.32	287.31
San Gorgonio Pass Water Agency	218.50	173.63	21.71	39.99	453.83	50.17	59.78	563.78
Metropolitan Water District of Southern California	74.03	54.46	34.53	19.16	182.18	30.00	21.90	234.08
Ventura County Flood Control District	103.99	77.16	25.53	37.10	243.78	43.00	30.88	317.66
Southern California Area	73.41	55.16	34.19	21.97	184.73	30.38	21.80	236.91
All Areas	41.21	30.53	17.84	13.13	102.71	22.77	12.96	138.44

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)	Revenue Bond Surcharge (c (8)	Minimum OMP&R (9)	Aqueduct Costs (10)	Variable OMP&R (11)	Total (12)
North Bay Aqueduct												
1	43.78	11.68	13.87	1.44	2.29	73.06	43.78	11.68	13.87	1.44	2.29	73.06
2	48.64	12.98	6.30	0.00	0.00	67.92	92.42	24.66	20.17	1.44	2.29	140.98
3A	9.68	2.58	13.46	2.68	3.24	31.64	102.10	27.24	33.63	4.12	5.53	172.62
3B	48.43	12.92	24.53	3.40	6.26	95.54	140.85	37.58	44.70	4.84	8.55	236.52
South Bay Aqueduct												
1	6.69	1.79	13.94	5.93	7.68	36.03	8.58	2.29	16.81	7.88	11.19	46.75
2	0.63	0.17	1.56	0.00	0.00	2.36	9.21	2.46	18.37	7.88	11.19	49.11
4	2.12	0.57	2.64	0.00	0.00	5.33	11.33	3.03	21.01	7.88	11.19	54.44
5	4.45	1.19	2.10	0.00	0.00	7.74	15.78	4.22	23.11	7.88	11.19	62.18
6	0.25	0.07	0.22	0.00	0.00	0.54	16.03	4.29	23.33	7.88	11.19	62.72
7	1.98	0.53	0.40	0.00	0.00	2.91	18.01	4.82	23.73	7.88	11.19	65.63
8	2.67	0.71	0.44	0.00	0.00	3.82	20.68	5.53	24.17	7.88	11.19	69.45
9	5.53	1.48	2.44	0.00	0.00	9.45	26.21	7.01	26.61	7.88	11.19	78.90
California Aqueduct												
1	1.89	0.50	2.87	1.95	3.51	10.72	1.89	0.50	2.87	1.95	3.51	10.72
2A	1.20	0.32	0.55	0.00	0.00	2.07	3.09	0.82	3.42	1.95	3.51	12.79
2B	0.61	0.16	0.27	0.00	0.00	1.04	3.70	0.98	3.69	1.95	3.51	13.83
3	0.53	0.14	0.19	0.00	0.00	0.86	4.23	1.12	3.88	1.95	3.51	14.69
4	0.85	0.23	1.42	0.91	1.52	4.93	5.08	1.35	5.30	2.86	5.03	19.62
5	0.65	0.17	0.26	0.00	0.00	1.08	5.73	1.52	5.56	2.86	5.03	20.70
6	0.19	0.05	0.13	0.00	0.00	0.37	5.92	1.57	5.69	2.86	5.03	21.07
7	0.92	0.25	0.33	0.00	0.00	1.50	6.84	1.82	6.02	2.86	5.03	22.57
8C	0.02	0.01	0.06	0.00	0.00	0.09	6.86	1.83	6.08	2.86	5.03	22.66
8D	0.38	0.10	0.26	0.00	0.00	0.74	7.24	1.93	6.34	2.86	5.03	23.40
9	0.31	0.08	0.24	0.00	0.00	0.63	7.55	2.01	6.58	2.86	5.03	24.03
10A	0.33	0.09	0.31	0.00	0.00	0.73	7.88	2.10	6.89	2.86	5.03	24.76
11B	0.49	0.13	0.21	0.00	0.00	0.83	8.37	2.23	7.10	2.86	5.03	25.59
12D	0.46	0.12	0.19	0.00	0.00	0.77	8.83	2.35	7.29	2.86	5.03	26.36
12E	0.32	0.09	0.31	0.00	0.00	0.72	9.15	2.44	7.60	2.86	5.03	27.08
13B	0.70	0.19	0.36	0.00	0.00	1.25	9.85	2.63	7.96	2.86	5.03	28.33
14A	2.70	0.72	2.81	1.56	2.85	10.64	12.55	3.35	10.77	4.42	7.88	38.97
14B	0.42	0.11	0.33	0.00	0.00	0.86	12.97	3.46	11.10	4.42	7.88	39.83
14C	0.36	0.10	0.25	0.00	0.00	0.71	13.33	3.56	11.35	4.42	7.88	40.54
15A	2.00	0.53	3.00	1.89	3.48	10.90	15.33	4.09	14.35	6.31	11.36	51.44
16A	3.31	0.88	4.71	4.09	7.58	20.57	18.64	4.97	19.06	10.40	18.94	72.01
17E	11.21	2.99	13.39	14.28	26.94	68.81	29.85	7.96	32.45	24.68	45.88	140.82
17F	2.90	0.77	0.14	0.00	0.00	3.81	32.75	8.73	32.59	24.68	45.88	144.63
18A	2.68	0.72	1.48	0.00	-2.84	2.04	35.43	9.45	34.07	24.68	43.04	146.67
19	1.98	0.53	0.92	0.00	0.00	3.43	37.41	9.98	34.99	24.68	43.04	150.10
19C	2.04	0.54		0.00		2.58	39.45	10.52	34.99	24.68	43.04	152.68
20A	1.58	0.42	1.45	0.00	0.00	3.45	41.03	10.94	36.44	24.68	43.04	156.13
20B	1.89	0.50	1.01	0.00	0.00	3.40	42.92	11.44	37.45	24.68	43.04	159.53
21	0.94	0.25	0.68	0.00	0.00	1.87	43.86	11.69	38.13	24.68	43.04	161.40
22A	0.96	0.26	0.36	0.00	0.00	1.58	44.82	11.95	38.49	24.68	43.04	162.98
22B	9.97	2.66	10.13	4.63	8.47	35.86	54.79	14.61	48.62	29.31	51.51	198.84
23	2.64	0.70	0.64	0.00	-3.37	0.61	57.43	15.31	49.26	29.31	48.14	199.45
24	5.14	1.37	1.85	0.00	0.00	8.36	62.57	16.68	51.11	29.31	48.14	207.81
25	3.77	1.01	0.11	0.00	0.00	4.89	66.34	17.69	51.22	29.31	48.14	212.70
26A	4.27	1.14	5.87	0.00	-24.07	(12.79)	70.61	18.83	57.09	29.31	24.07	199.91
28G	7.15	1.91	2.13	0.00	0.00	11.19	77.76	20.74	59.22	29.31	24.07	211.10
28H	6.87	1.83	2.24	0.00	0.00	10.94	84.63	22.57	61.46	29.31	24.07	222.04
28J	79.21	21.14	33.25	0.00	0.00	133.60	163.84	43.71	94.71	29.31	24.07	355.64
West Branch												
29A	3.62	0.97	6.97	1.74	3.45	16.75	36.37	9.70	39.56	26.42	49.33	161.38
29F	2.67	0.71	0.77	0.00	0.00	4.15	39.04	10.41	40.33	26.42	49.33	165.53
29G	8.85	2.36	3.96	0.00	-12.04	3.13	47.89	12.77	44.29	26.42	37.29	168.66
29H	5.54	1.48	3.66	0.00	0.00	10.68	53.43	14.25	47.95	26.42	37.29	179.34
29J	9.25	2.47	0.98	0.00	-22.04	(9.34)	62.68	16.72	48.93	26.42	15.25	170.00
30	14.86	3.97	2.68	0.00	0.00	21.51	77.54	20.69	51.61	26.42	15.25	191.51
Coastal Branch												
31A	7.08	1.89	17.49	1.89	2.58	30.93	14.32	3.82	23.83	4.75	7.61	54.33
33A	248.91	66.43	19.44	16.03	35.18	385.99	263.23	70.25	43.27	20.78	42.79	440.32
34	163.77	43.71	0.09	0.00	0.00	207.57	427.00	113.96	43.36	20.78	42.79	647.89
35	0.00	0.00	0.00	0.00	0.00	0.00	427.00	113.96	43.36	20.78	42.79	647.89

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 1998 (from 132-97, Table B-22) by the total Transportation Capital (132-98, B-15) and the Capital component of the Delta Water Charge (132-98, B-4 * 11.71839699). This rate is multiplied by the equivalent rate for the Transportation Capital cost (column 1).

Table B-26

Captial Costs of Each Aqueduct Reach to Be Reimbursed through the Capital Cost Component of the East Branch Enlargement Transportation Charge

(Dollars)

Calendar Year	California Aqueduct							
	Mojave Division							
	Reach 18A (1)	Reach 19 (2)	Reach 20A (3)	Reach 20B (4)	Reach 21 (5)	Reach 22A (6)	Reach 22B (7)	Reach 23B (8)
1952	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	117,000	0	0	0	0	0	0	0
1980	200,000	0	0	0	0	0	0	74,000
1981	135,000	0	0	0	0	0	0	385,000
1982	1,503,000	0	0	0	0	0	0	1,586,000
1983	2,260,000	0	0	0	0	0	0	2,965,000
1984	735,000	0	0	0	0	0	796,000	1,380,000
1985	93,000	435,000	75,000	544,000	859,000	703,000	970,000	146,000
1986	784,000	4,477,000	3,144,000	2,234,000	1,569,000	1,203,000	1,808,000	34,000
1987	11,000	951,000	1,076,000	666,000	399,000	47,000	16,421,000	43,000
1988	1,000	125,000	1,681,000	1,730,000	2,024,000	40,000	13,326,000	70,000
1989	0	206,000	2,089,000	2,174,000	2,510,000	61,000	11,242,000	229,000
1990	1,000	577,000	903,000	735,000	928,000	194,000	20,131,000	887,000
1991	1,000	280,000	413,000	333,000	422,000	93,000	20,702,000	1,215,000
1992	0	40,000	41,000	39,000	35,000	13,000	9,599,000	3,719,000
1993	0	19,000	16,000	19,000	12,000	6,000	2,319,000	19,654,000
1994	0	2,000	3,000	2,000	4,000	3,000	803,000	3,173,000
1995	0	0	0	0	0	0	223,000	1,465,000
1996	0	0	0	0	0	0	6,014,000	478,000
1997	0	0	0	0	0	0	391,000	1,327,000
1998	0	0	0	0	0	0	13,000	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	5,841,000	7,112,000	9,441,000	8,476,000	8,762,000	2,363,000	104,758,000	38,830,000

Table B-26

Captial Costs of Each Aqueduct Reach to Be Reimbursed through the Capital Cost Component of the East Branch Enlargement Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)							Grand Total (16)
	Mojave Division (continued)			Santa Ana Division				
	Reach 23C (9)	Reach 24 (10)	Total (11)	Reach 25 (12)	Reach 26A (13)	Reach 26B (14)	Total (15)	
1952	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	117,000	0	0	0	0	117,000
1980	0	0	274,000	0	0	0	0	274,000
1981	0	0	520,000	0	0	0	0	520,000
1982	0	0	3,089,000	0	0	0	0	3,089,000
1983	0	0	5,225,000	0	0	0	0	5,225,000
1984	0	0	2,911,000	0	0	0	0	2,911,000
1985	0	0	3,825,000	0	528,000	89,000	617,000	4,442,000
1986	25,000	0	15,278,000	0	1,926,000	154,000	2,080,000	17,358,000
1987	178,000	0	19,792,000	0	3,699,000	437,000	4,136,000	23,928,000
1988	632,000	0	19,629,000	0	5,667,000	3,329,000	8,996,000	28,625,000
1989	1,130,000	0	19,641,000	0	40,879,000	1,650,000	42,529,000	62,170,000
1990	2,066,000	0	26,422,000	0	29,853,000	1,650,000	31,503,000	57,925,000
1991	4,980,000	0	28,439,000	0	26,027,000	999,000	27,026,000	55,465,000
1992	11,920,000	0	25,406,000	0	15,317,000	299,000	15,616,000	41,022,000
1993	16,303,000	0	38,348,000	0	4,878,000	0	4,878,000	43,226,000
1994	7,081,000	0	11,071,000	0	3,151,000	0	3,151,000	14,222,000
1995	5,350,000	0	7,038,000	0	2,137,000	0	2,137,000	9,175,000
1996	1,706,000	0	8,198,000	0	9,181,000	0	9,181,000	17,379,000
1997	1,905,000	0	3,623,000	0	175,000	0	175,000	3,798,000
1998	28,000	0	41,000	0	0	0	0	41,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	53,304,000	0	238,887,000	0	143,418,000	8,607,000	152,025,000	390,912,000

Table B-27

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of the East Branch Enlargement Transportation Charge (a

(Dollars)

Calendar Year	California Aqueduct							
	Mojave Division							
	Reach 18A (1)	Reach 19 (2)	Reach 20A (3)	Reach 20B (4)	Reach 21 (5)	Reach 22A (6)	Reach 22B (7)	Reach 23B (8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	1,216,000	0
1996	0	0	0	0	0	0	1,168,800	0
1997	0	0	0	0	0	0	1,061,700	0
1998	0	0	0	0	0	0	1,094,659	0
1999	0	0	0	0	0	0	1,152,692	0
2000	0	0	0	0	0	0	1,193,625	0
2001	0	0	0	0	0	0	1,211,397	0
2002	0	0	0	0	0	0	1,211,397	0
2003	0	0	0	0	0	0	1,211,397	0
2004	0	0	0	0	0	0	1,211,397	0
2005	0	0	0	0	0	0	1,211,397	0
2006	0	0	0	0	0	0	1,211,397	0
2007	0	0	0	0	0	0	1,211,397	0
2008	0	0	0	0	0	0	1,211,397	0
2009	0	0	0	0	0	0	1,211,397	0
2010	0	0	0	0	0	0	1,211,397	0
2011	0	0	0	0	0	0	1,211,397	0
2012	0	0	0	0	0	0	1,211,397	0
2013	0	0	0	0	0	0	1,211,397	0
2014	0	0	0	0	0	0	1,211,397	0
2015	0	0	0	0	0	0	1,211,397	0
2016	0	0	0	0	0	0	1,211,397	0
2017	0	0	0	0	0	0	1,211,397	0
2018	0	0	0	0	0	0	1,211,397	0
2019	0	0	0	0	0	0	1,211,397	0
2020	0	0	0	0	0	0	1,211,397	0
2021	0	0	0	0	0	0	1,211,397	0
2022	0	0	0	0	0	0	1,211,397	0
2023	0	0	0	0	0	0	1,211,397	0
2024	0	0	0	0	0	0	1,211,397	0
2025	0	0	0	0	0	0	1,211,397	0
2026	0	0	0	0	0	0	1,211,397	0
2027	0	0	0	0	0	0	1,211,397	0
2028	0	0	0	0	0	0	1,211,397	0
2029	0	0	0	0	0	0	1,211,397	0
2030	0	0	0	0	0	0	1,211,397	0
2031	0	0	0	0	0	0	1,211,397	0
2032	0	0	0	0	0	0	1,211,397	0
2033	0	0	0	0	0	0	1,211,397	0
2034	0	0	0	0	0	0	1,211,397	0
2035	0	0	0	0	0	0	1,211,397	0
Total	0	0	0	0	0	0	49,286,371	0

a) Presently, this table shows only the estimated incremental minimum OMP&R costs attributable to East Branch Enlargement. Under Article 49(e)(1), the contractors participating in the East Branch Enlargement will also share in the remaining minimum OMP&R costs of the affected reaches according to a formula to be developed by DWR in consultation with the affected contractors. Once the formula is developed, subsequent versions of this table will reflect the transfer of a share of the minimum OMP&R costs presently shown in Table B-11.

Table B-27

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of the East Branch Enlargement Transportation Charge (Dollars)

Calendar Year	California Aqueduct (continued)							Total (16)
	Mojave Division (continued)			Santa Ana Division				
	Reach 23C (9)	Reach 24 (10)	Subtotal (11)	Reach 25 (12)	Reach 26A (b (13)	Reach 26B (14)	Subtotal (15)	
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0
1995	370,500	0	1,586,500	0	1,218,500	0	1,218,500	2,805,000
1996	554,500	0	1,723,300	0	1,435,900	0	1,435,900	3,159,200
1997	575,200	0	1,636,900	0	1,423,700	0	1,423,700	3,060,600
1998	912,284	0	2,006,943	0	1,501,833	0	1,501,833	3,508,776
1999	960,455	0	2,113,147	0	1,562,568	0	1,562,568	3,675,715
2000	994,652	0	2,188,277	0	1,603,846	0	1,603,846	3,792,123
2001	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2002	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2003	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2004	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2005	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2006	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2007	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2008	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2009	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2010	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2011	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2012	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2013	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2014	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2015	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2016	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2017	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2018	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2019	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2020	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2021	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2022	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2023	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2024	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2025	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2026	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2027	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2028	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2029	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2030	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2031	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2032	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2033	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2034	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
2035	1,009,461	0	2,220,858	0	1,627,726	0	1,627,726	3,848,584
Total	39,698,726	0	88,985,097	0	65,716,757	0	65,716,757	154,701,854

b) Units 3 and 4 at Devil Canyon Powerplant were operational in 1993. These minimum OMP&R costs for Reach 26A will be revised to reflect operational date of those units.

Table B-28

Capital Costs of East Branch Enlargement Transportation Facilities Allocated to Each Contractor

(Dollars)

	Southern California Area							
Calendar Year	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)	Total (8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	11,731	1,010	10,566	466	0	93,227	117,000
1980	0	28,241	4,708	27,495	797	0	212,759	274,000
1981	0	56,134	16,676	61,271	538	0	385,381	520,000
1982	0	326,180	76,872	337,913	5,988	0	2,342,047	3,089,000
1983	0	554,658	138,964	582,070	9,004	0	3,940,304	5,225,000
1984	0	306,514	68,842	314,468	2,928	0	2,218,248	2,911,000
1985	49,675	447,266	65,773	347,262	4,514	21,614	3,505,896	4,442,000
1986	185,353	1,757,633	236,324	1,363,586	41,900	78,842	13,694,362	17,358,000
1987	49,735	2,455,279	378,535	1,774,447	10,615	151,421	19,107,968	23,928,000
1988	124,534	2,689,959	500,466	1,712,431	13,783	231,982	23,351,845	28,625,000
1989	155,446	7,118,094	2,423,000	1,671,088	17,419	1,673,409	49,111,544	62,170,000
1990	62,786	6,459,229	1,943,918	2,234,452	8,680	1,222,053	45,993,882	57,925,000
1991	28,686	6,265,822	1,875,066	2,168,712	4,024	1,065,433	44,057,257	55,465,000
1992	2,911	4,826,764	1,610,921	1,359,335	471	627,012	32,594,586	41,022,000
1993	1,205	5,094,237	1,828,410	2,722,156	212	199,684	33,380,095	43,225,999
1994	273	1,726,376	631,816	478,543	27	128,988	11,255,977	14,222,000
1995	0	1,130,963	423,243	206,978	0	87,480	7,326,337	9,175,001
1996	0	2,025,987	645,296	606,205	0	375,830	13,725,682	17,379,000
1997	0	449,702	154,253	204,617	0	7,164	2,982,264	3,798,000
1998	0	4,859	1,406	1,179	0	0	33,556	41,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	660,604	43,735,628	13,025,499	18,184,774	121,366	5,870,912	309,313,217	390,912,000

Table B-29

Capital Cost Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area							Total
	Antelope Valley-East Kern Water Agency (1)	Coachella Valley Water District (2)	Desert Water Agency (3)	Mojave Water Agency (4)	Palmdale Water District (5)	San Bernardino Valley Municipal Water District (a (6)	Metropolitan Water District of Southern California (7)	(8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	18,266	1,209,293	360,156	502,810	3,356	0	8,552,529	10,646,410
1989	19,175	1,269,524	378,094	527,854	3,523	0	8,978,505	11,176,675
1990	19,186	1,270,244	378,308	528,153	3,525	0	8,983,597	11,183,013
1991	19,187	1,270,261	378,314	528,160	3,525	0	8,983,717	11,183,164
1992	40,400	2,674,722	796,595	1,112,119	7,423	0	18,916,541	23,547,800
1993	41,977	2,779,106	827,683	1,155,521	7,712	0	19,654,781	24,466,780
1994	41,766	2,765,150	823,526	1,149,718	7,673	0	19,556,077	24,343,910
1995	43,711	2,893,894	861,870	1,203,248	8,031	0	20,466,605	25,477,359
1996	46,558	3,082,409	918,014	1,281,630	8,554	0	21,799,841	27,137,006
1997	50,368	3,334,650	993,137	1,386,509	9,254	0	23,583,776	29,357,694
1998	63,847	4,227,055	1,258,916	1,757,561	11,730	0	29,895,167	37,214,276
1999	66,379	4,394,680	1,308,839	1,827,258	12,195	0	31,080,673	38,690,024
2000	67,934	4,497,589	1,339,488	1,870,046	12,481	0	31,808,473	39,596,011
2001	67,906	4,495,746	1,338,939	1,869,280	12,476	0	31,795,441	39,579,788
2002	67,444	4,465,138	1,329,823	1,856,554	12,391	0	31,578,976	39,310,326
2003	67,368	4,460,169	1,328,343	1,854,487	12,377	0	31,543,832	39,266,576
2004	64,903	4,296,908	1,279,720	1,786,605	11,924	0	30,389,190	37,829,250
2005	64,871	4,294,802	1,279,093	1,785,730	11,918	0	30,374,299	37,810,713
2006	66,103	4,376,357	1,303,382	1,819,639	12,145	0	30,951,085	38,528,711
2007	66,149	4,379,411	1,304,291	1,820,909	12,153	0	30,972,682	38,555,595
2008	64,572	4,275,037	1,273,206	1,777,512	11,863	0	30,234,515	37,636,705
2009	64,679	4,282,137	1,275,321	1,780,463	11,883	0	30,284,725	37,699,208
2010	64,786	4,289,199	1,277,424	1,783,400	11,903	0	30,334,671	37,761,383
2011	65,130	4,311,944	1,284,198	1,792,857	11,966	0	30,495,536	37,961,631
2012	65,239	4,319,200	1,286,359	1,795,874	11,986	0	30,546,848	38,025,506
2013	65,155	4,313,595	1,284,690	1,793,544	11,970	0	30,507,209	37,976,163
2014	63,908	4,231,064	1,260,110	1,759,228	11,741	0	29,923,520	37,249,571
2015	65,019	4,304,629	1,282,020	1,789,816	11,946	0	30,443,799	37,897,229
2016	65,089	4,309,265	1,283,400	1,791,743	11,958	0	30,476,584	37,938,039
2017	65,238	4,319,108	1,286,332	1,795,836	11,986	0	30,546,199	38,024,699
2018	65,353	4,326,722	1,288,599	1,799,002	12,007	0	30,600,048	38,091,731
2019	65,639	4,345,679	1,294,245	1,806,884	12,060	0	30,734,116	38,258,623
2020	65,775	4,354,649	1,296,917	1,810,613	12,084	0	30,797,560	38,337,598
2021	66,459	4,399,968	1,310,414	1,829,456	12,210	0	31,118,068	38,736,575
2022	66,801	4,422,617	1,317,159	1,838,874	12,273	0	31,278,252	38,935,976
2023	54,824	3,629,671	1,081,001	1,509,176	10,073	0	25,670,266	31,955,011
2024	55,035	3,643,613	1,085,154	1,514,973	10,111	0	25,768,868	32,077,754
2025	43,882	2,905,223	865,244	1,207,959	8,062	0	20,546,724	25,577,094
2026	19,836	1,313,257	391,119	546,037	3,644	0	9,287,797	11,561,690
2027	14,376	951,755	283,455	395,729	2,641	0	6,731,137	8,379,093
2028	11,759	778,493	231,853	323,688	2,160	0	5,505,765	6,853,718
2029	11,830	783,225	233,263	325,656	2,173	0	5,539,238	6,895,385
2030	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0
Total	2,193,882	145,247,158	43,258,014	60,392,111	403,066	0	1,027,237,232	1,278,731,463

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 1996, $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)

	Southern California Area							
Calendar Year	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)	Total (8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0
1995	0	322,201	93,362	110,251	0	49,880	2,229,306	2,805,000
1996	0	368,045	113,173	105,971	0	58,780	2,513,231	3,159,200
1997	0	358,359	112,543	96,261	0	58,280	2,435,157	3,060,600
1998	0	414,221	132,607	99,249	0	61,479	2,801,220	3,508,776
1999	0	433,788	138,610	104,511	0	63,965	2,934,841	3,675,715
2000	0	447,421	142,770	108,222	0	65,655	3,028,055	3,792,123
2001	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2002	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2003	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2004	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2005	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2006	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2007	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2008	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2009	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2010	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2011	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2012	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2013	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2014	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2015	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2016	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2017	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2018	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2019	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2020	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2021	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2022	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2023	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2024	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2025	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2026	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2027	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2028	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2029	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2030	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2031	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2032	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2033	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2034	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2035	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
Total	0	18,236,940	5,804,425	4,468,620	0	2,690,159	123,501,710	154,701,854

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	18,266	1,209,293	360,156	502,810	3,356	0	8,552,529	10,646,410
1989	19,175	1,269,524	378,094	527,854	3,523	0	8,978,505	11,176,675
1990	19,186	1,270,244	378,308	528,153	3,525	0	8,983,597	11,183,013
1991	19,187	1,270,261	378,314	528,160	3,525	0	8,983,717	11,183,164
1992	40,400	2,674,722	796,595	1,112,119	7,423	0	18,916,541	23,547,800
1993	41,977	2,779,106	827,683	1,155,521	7,712	0	19,654,781	24,466,780
1994	41,766	2,765,150	823,526	1,149,718	7,673	0	19,556,077	24,343,910
1995	43,711	3,216,095	955,232	1,313,499	8,031	49,880	22,695,911	28,282,359
1996	46,558	3,450,454	1,031,187	1,387,601	8,554	58,780	24,313,072	30,296,206
1997	50,368	3,693,009	1,105,680	1,482,770	9,254	58,280	26,018,933	32,418,294
1998	63,847	4,641,276	1,391,523	1,856,810	11,730	61,479	32,696,387	40,723,052
1999	66,379	4,828,468	1,447,449	1,931,769	12,195	63,965	34,015,514	42,365,739
2000	67,934	4,945,010	1,482,258	1,978,268	12,481	65,655	34,836,528	43,388,134
2001	67,906	4,949,829	1,483,835	1,979,113	12,476	66,632	34,868,581	43,428,372
2002	67,444	4,919,221	1,474,719	1,966,387	12,391	66,632	34,652,116	43,158,910
2003	67,368	4,914,252	1,473,239	1,964,320	12,377	66,632	34,616,972	43,115,160
2004	64,903	4,750,991	1,424,616	1,896,438	11,924	66,632	33,462,330	41,677,834
2005	64,871	4,748,885	1,423,989	1,895,563	11,918	66,632	33,447,439	41,659,297
2006	66,103	4,830,440	1,448,278	1,929,472	12,145	66,632	34,024,225	42,377,295
2007	66,149	4,833,494	1,449,187	1,930,742	12,153	66,632	34,045,822	42,404,179
2008	64,572	4,729,120	1,418,102	1,887,345	11,863	66,632	33,307,655	41,485,289
2009	64,679	4,736,220	1,420,217	1,890,296	11,883	66,632	33,357,865	41,547,792
2010	64,786	4,743,282	1,422,320	1,893,233	11,903	66,632	33,407,811	41,609,967
2011	65,130	4,766,027	1,429,094	1,902,690	11,966	66,632	33,568,676	41,810,215
2012	65,239	4,773,283	1,431,255	1,905,707	11,986	66,632	33,619,988	41,874,090
2013	65,155	4,767,678	1,429,586	1,903,377	11,970	66,632	33,580,349	41,824,747
2014	63,908	4,685,147	1,405,006	1,869,061	11,741	66,632	32,996,660	41,098,155
2015	65,019	4,758,712	1,426,916	1,899,649	11,946	66,632	33,516,939	41,745,813
2016	65,089	4,763,348	1,428,296	1,901,576	11,958	66,632	33,549,724	41,786,623
2017	65,238	4,773,191	1,431,228	1,905,669	11,986	66,632	33,619,339	41,873,283
2018	65,353	4,780,805	1,433,495	1,908,835	12,007	66,632	33,673,188	41,940,315
2019	65,639	4,799,762	1,439,141	1,916,717	12,060	66,632	33,807,256	42,107,207
2020	65,775	4,808,732	1,441,813	1,920,446	12,084	66,632	33,870,700	42,186,182
2021	66,459	4,854,051	1,455,310	1,939,289	12,210	66,632	34,191,208	42,585,159
2022	66,801	4,876,700	1,462,055	1,948,707	12,273	66,632	34,351,392	42,784,560
2023	54,824	4,083,754	1,225,897	1,619,009	10,073	66,632	28,743,406	35,803,595
2024	55,035	4,097,696	1,230,050	1,624,806	10,111	66,632	28,842,008	35,926,338
2025	43,882	3,359,306	1,010,140	1,317,792	8,062	66,632	23,619,864	29,425,678
2026	19,836	1,767,340	536,015	655,870	3,644	66,632	12,360,937	15,410,274
2027	14,376	1,405,838	428,351	505,562	2,641	66,632	9,804,277	12,227,677
2028	11,759	1,232,576	376,749	433,521	2,160	66,632	8,578,905	10,702,302
2029	11,830	1,237,308	378,159	435,489	2,173	66,632	8,612,378	10,743,969
2030	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2031	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2032	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2033	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2034	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
2035	0	454,083	144,896	109,833	0	66,632	3,073,140	3,848,584
Total	2,193,882	163,484,098	49,062,439	64,860,731	403,066	2,690,159	1,150,738,942	1,433,433,317