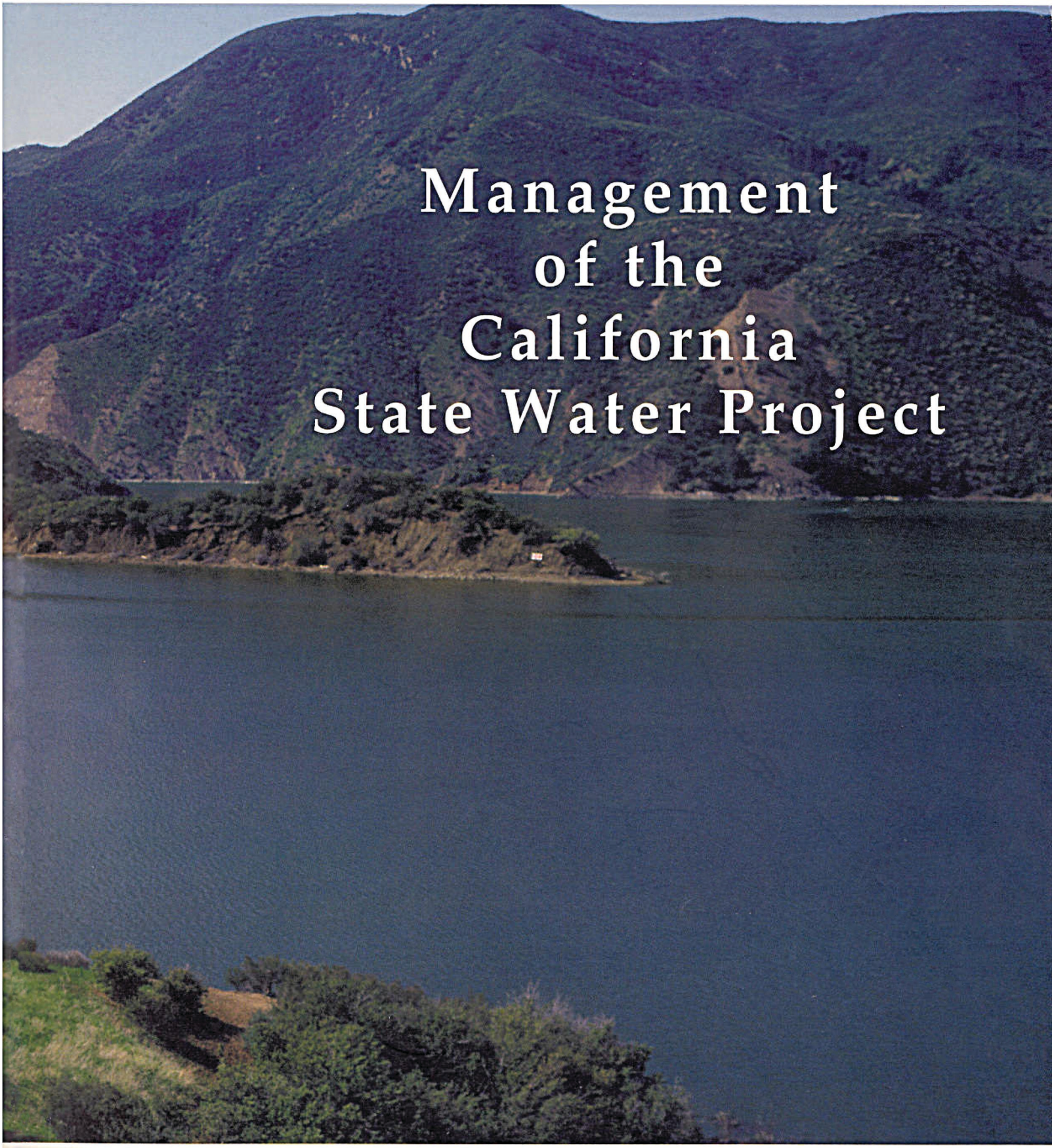
BULLETIN 132-96 AUGUST 1997



Management of the California State Water Project

PETE WILSON, *Governor* STATE OF CALIFORNIA
DOUGLAS P. WHEELER, *Secretary for Resources* THE RESOURCES AGENCY
DAVID N. KENNEDY, *Director* DEPARTMENT OF WATER RESOURCES

❖ ❖ ❖

Publishing Information

Cover photo shows panoramic view of Pyramid Lake.
Cover design was provided by Thom Lewis, Senior Graphic Artist, Division of Operations and Maintenance.
Photos were provided by the Office of Water Education Photography Unit.
Copies of this document are available for $15 from:
Publication Sales
Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236-0001

Printed on recycled paper

Management of the California State Water Project

❖ ❖ ❖

Pete Wilson, Governor
State of California

Douglas P. Wheeler, Secretary for Resources
The Resources Agency

David N. Kennedy, Director
Department of Water Resources

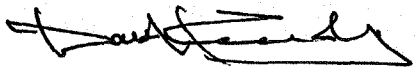
❖ ❖ ❖

Foreword

Bulletin 132-96, *Management of the California State Water Project*, continues the Bulletin 132 annual series begun in 1963. Bulletin 132-96 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 1997.

Bulletin 132-96 also discusses significant SWP events and issues that affect SWP management and operations. Because various programs may be based on either the water year, calendar year, or fiscal year, the Bulletin covers the period from October 1, 1994, to June 30, 1996.

Other subjects covered in this report include the statewide devastation caused by major floods in early 1995, water supply and delivery, continued construction of the Coastal Branch Phase II, implementation of the Monterey Agreement, amendments to water contracts, and Delta planning and activities.



David N. Kennedy
Director

Contents

❖ ❖ ❖

Foreword iii
Organization xiv
Acknowledgments xv
Departmental Divisions and Offices xvi

Introduction The State Water Project xvii
Water Delivery Facilities xix
Project Design xix
Additional Construction xxii
Methods of Financing xxii
Long-Term Contracting Agencies xxv

Part I The Year in Review 1
Chapter 1 Executive Summary 3
1995 Water Deliveries 6
Entitlement Water 6
Water for Recreation, Fish, and Wildlife 6
Non-SWP Water Deliveries 6
Feather River Water Rights Settlement Agreements 6
Construction and Maintenance 9
Coastal Branch Construction 9
East Branch Extension 9
Monterey Agreement 9
The Environmental Impact Report 9
Legal Challenges 9
Amendments to Water Contracts 10
Operational Changes 11
Delta Planning and Activities 11
Delta Programs 12
Department Reorganization—Division of Engineering 13

Part II State Water Project Management 15
Chapter 2 Future Storage and Delivery Capabilities 17
Significant Events 18
SWP Planning Strategy 19
Service Area Impact Study 20
Study Update 20
Coastal Branch Delivery Facilities 20
Phase II Facilities 20
Phase II Construction 20
Los Banos Grandes 21
Investigations and Status 21
Kern Water Bank 23

Chapter 3 Water Supply Development **25**
Significant Events 26
Water Transfers 27
Drought Water Banks 27
1995 Drought Water Bank 27
Supplemental Water Purchase Program 28
State Water Project Conveyance 28
Conjunctive Water Use 28
The Sacramento Valley 28
Stanislaus River Basin and Calaveras River Water Use Program 29
Local Water Supply Projects 30

Chapter 4 Delta Resources **33**
Significant Events 34
Delta Water Management Programs 35
Interim South Delta Program 35
Interim North Delta Program 37
West Delta Program 37
Delta Flood Control Program 38
Special Projects 39
Delta Water Rights Management 41
Delta Agricultural Water Users 41
Western Delta Industrial Water Users 42
Western Delta Municipal Water Users 43

Chapter 5 Environmental Programs **45**
Significant Events 46
Water Transfers 47
Real-time Monitoring 47
1995 Fish Tracking Programs 47
Uses of Real-time Monitoring 48
Biological Opinions 48
Operational Changes 48
Population Estimates 49
Petitions for Additional Listings 51
Georgiana Slough Acoustical Barrier 51
Skinner Fish Protective Facility 51
Mitigation Projects 53
Predator Removal Program 53
Feather River Fish Studies 54

Chapter 6 Water Quality Programs **55**
Significant Events 56
Delta Activities 57
Water Supply Conditions 59
Operations under the Agreement, Amended D-1485, and the Winter-run and Delta Smelt Biological Opinions 59

Water Quality Standards 60
Flow Standards 61
Export Standards 61
Temporary Delta Barriers 62
South Delta Barriers 62
Other Activities in the Delta 63
Activities Outside the Delta 63
Water Quality Monitoring 63
California Aqueduct Sediment Inflows Associated with March 1995 Flooding Events 64
SWP Pathogen Monitoring Program 66
Pondweed Abatement in Clifton Court Forebay 67
Municipal Water Quality Investigations Program 68
Suisun Marsh Activities 71
Suisun Marsh Expenditure History 71
SWRCB Standards for Suisun Marsh 72
Water Quality Monitoring and Compliance 74
Suisun Ecological Workgroup 74
Western Suisun Marsh Salinity Control Project 76
Amending the Suisun Marsh Preservation Agreement 76
Fisheries Monitoring for the Western Suisun Marsh Salinity Control Test 77
Adult Salmon Migration Study 77
Suisun Marsh Salinity Control Gate Operation 77
Lower Joice Island Water Intake Fish Screen 78
Dredge Spoil Site No. 2 Survey 78
Initial Facilities Maintenance 78

Chapter 7 Local Assistance Programs 81
Significant Events 82
Davis-Grunsky Act 83
Basic Provisions 83
Current Activities 84
Agricultural Drainage Program 84
Drainage Monitoring and Evaluation 84
Drainage Reduction and Reuse 85
Drainage Treatment 85
Evaporation Ponds 85
Review of Environmental Impact Documents 86

Chapter 8 Legislation and Litigation 87
Significant Events 88
Legislation 89
SB 901 (Costa) (Chapter 881, Statutes of 1995) Water Availability and Land Use 89
SB 1011 (Polanco) (Chapter 854, Statutes of 1995) Urban Water Management Plans 89
Litigation 89
North Delta Water Agency v. State of California 89
Porgans, et al. v. Babbitt, et al. 89
Golden Gate Audubon Society v. State Water Resources Control Board 90

San Joaquin Tributaries Association, et al. v. State Water Resources Control Board, et al.; County of San Joaquin, et al. v. State Water Resources Control Board, et al.; and Central Delta Water Agency, et al. v. United States, et al. 90
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 90
Anderson Farms, et al. v. United States 91
Westlands Water District, et al. v. United States 91
Professional Engineers in California Government, et al. v. Department of Water Resources, et al. 92
Southern California Bass Council, et al. v. State of California 92
Department of Water Resources v. Nevada Power Company 92
City of Barstow v. City of Adelanto 93

Part III State Water Project Operations 95
Chapter 9 Water Storage 97
Significant Events 98
Water Year 1994-1995 99
Precipitation and Runoff 99
Storage 99
Diversions from the Delta 101

Chapter 10 Water Contracts and Deliveries 107
Significant Events 108
Amendments to Long-Term SWP Water Supply Contracts 110
Miscellaneous Agreements with Long-Term SWP Contractors 112
Water Conveyance/Storage Agreements 112
Turnout Agreements 114
Agreements Related to the Monterey Agreement 114
Amendments to Miscellaneous Agreements with Long-Term SWP Contractors 115
Agreements with Other Agencies 115
Water Conveyance Agreements–CVP Water 115
Other Agreements 116
Turnout Agreements 117
Water Deliveries 117
Water Deliveries and Credits to Long-Term SWP Contractors 117
Water Delivered in 1995, by Month 126
Entitlement Water 127
Annual Water Entitlements and Water Delivered Since 1962 130

Chapter 11 Power Resources 131
Significant Events 132
Power Resources Program 133
Existing SWP Power Facilities 133
Future SWP Power Facilities 135
Contractual Resource Arrangements 135
Contractual Transmission Arrangements 137
Load Management 137

SWP Power Operation in 1995 138
Energy Consumed 138
Energy Generated 138
Contractual Resource Arrangements and Cost 138
Sales of Excess Power 143
Forecasting Power Operations 143
Criteria 143

Chapter 12 Facilities Maintenance 145
Significant Events 146
Inspecting and Maintaining Project Dams 147
Oroville-Thermalito Area 147
Delta Field Division 147
Southern Field Division 147
Routine Inspections 147
Independent Reviews 148
Maintaining Other Project Facilities 148
Emergency Repair at Mile 39.5 148
Sediment Removal Project—California Aqueduct Mile 135 to 159 149
Seepage Repair—Pool 49, Mile 331.89, 334.02, and 334.95 149
Arroyo Pasajero Program 149
Repairs and Modifications 151

Chapter 13 Engineering and Right of Way 157
Significant Events 158
Division of Engineering Activities 159
Division of Design and Construction Reorganized 159
Oroville Division 160
Delta Facilities 162
North San Joaquin Division 165
San Luis Division 166
Coastal Branch 167
South San Joaquin Division 168
Tehachapi Division 168
Mojave Division 168
Santa Ana Division 169
West Branch 170
Miscellaneous 170
Right of Way Activities 171
Coastal Branch, Phase II 171
Tuolumne River Restoration 171
West Delta Program—Sherman Island 171

Chapter 14 Recreation 173
Significant Events 174
Recreation Areas 175
Facility Planning 177
New Facilities 177

Improvements to Facilities 178
Oroville Recreation Plan 178
Fish Plantings 178

Chapter 15 Financial Analysis 181
Significant Events 182
Capital Requirements and Financing 183
Capital Requirements 183
Capital Financing 186
Capital Financing Sources 188
Annual Revenues and Expenditures 191
Project Revenues 191
Project Expenses 195
Future Costs of Water Service 201

Chapter 16 SWP Information and Water Education 203
Significant Events 204
State Water Project Information and Education Programs 205
Media Outreach 205
Internet Web Site 205
Publications 206
Video Projects 207
Visitor Center Program 207
Program Highlights in Fiscal Year 1995-1996 207
Edmonston Visitor Area 207
Vista del Lago Media Day 207
Vista del Lago Public Survey 208
Water Safety Education 208
SWP Visits and Tours 208
Displays and Exhibits 208
Portable Exhibits 208
Stationary Exhibits 209
School Education Program 209
Water Awareness Month Activities 209
Summary 210

Appendix A: Annual Financial Report (bound separately)
Appendix B: Data and Computations Used in Determining Water Charges for 1997 211
Appendix D: Costs of Recreation and Fish and Wildlife Enhancement (bound separately)
Appendix E: Water Operations in the Sacramento-San Joaquin Delta (bound separately)
Appendix F: San Joaquin Valley Post-Project Economic Impact (discontinued)

Sidebars

❖ ❖ ❖

State Water Project "Monterey Agreement" 10
The Delta 13
Endangered Species Act 21
Environmental Policy Acts 22
Central Valley Project Improvement Act of 1992 31
Clean Water Act 38
South Delta Water Agency v. United States, et al. 41
Federal Agencies 43
U.S. Fish and Wildlife Service 49
National Marine Fisheries Service 54
State Water Resources Control Board 60
Bryte Laboratory 63
Quality Assurance/Quality Control 68
Plan of Protection for Suisun Marsh 72
Suisun Marsh Preservation Agreement 74
Long-Term SWP Water Supply Contracts 109
Recreation Financing 177

❖ ❖ ❖

Tables

❖ ❖ ❖

Table I-1	Physical Characteristics of Primary Storage Facilities	xxii
Table I-2	Physical Characteristics of Primary Dams	xxiii
Table I-3	Pumping Plant Characteristics	xxiii
Table I-4	Power Plant Characteristics, by Type of Facility	xxiv
Table I-5	Total Miles of Aqueducts	xxiv
Table I-6	Long-Term Water Supply Contracting Agencies, by Area	xxvii
Table 1-1	Water Delivered, by Category, 1962 through 1995	8
Table 6-1	1995 Water Quality at Selected State Water Project Locations	65
Table 6-2	Suisun Marsh Expenditure and Reimbursements, as of June 30, 1996	73
Table 10-1	Amendments to Water Supply Contracts, by Category	110
Table 10-2	Amendments to Water Supply Contracts, June 30, 1996, by Category and Contracting Agency	111
Table 10-3	Water Delivered in 1995 and Credits Granted to Long-Term Contractors through 1995, by Service Area	119
Table 10-4	Water Delivered in 1995, by Month	120
Table 10-5	Total Amounts of Annual Water Entitlements and Water Conveyed, by Type, 1962 through 1995	125
Table 11-1	Energy Used at Pumping Plants and Power Plants in 1995, by Month	139
Table 11-2	Energy Generated and Purchased in 1995, by Month	140
Table 11-3	Power, Transmission, and Other Services Purchased in 1995 and Costs of Purchases, by Area	141
Table 11-4	Energy Sold in 1995 and Revenue from Sales, by Area	142
Table 12-1	Outages for Maintenance and Repair of Facilities in 1995, by Month	152
Table 13-1	Design Activities, July 1995 through June 1996, by Division	161
Table 13-2	Construction Activities, July 1995 through June 1996, by Division	163
Table 14-1	Recreation-Days Recorded in 1995, by Division and Facility	175
Table 14-2	Fish Planted in 1995	179
Table 15-1	Capital Requirements and Financing, June 30, 1996	197
Table 15-2	State Water Project Revenues and Expenditures, June 30, 1996	198
Table 15-3	Allocation of Capital Expenditures	184
Table 15-4	Estimated Costs for East Branch Enlargement	187
Table 15-5	Estimated Capital Costs for Power Generation and Transmission Facilities	187
Table 15-6	Estimated Costs for Planning Additional Conservation Facilities	187
Table 15-7	Application of Revenue Bond Proceeds	189
Table 15-8	Effect of Revenue Bond Proceeds on Project Interest Rate	192
Table 15-9	Actual Bond Sales and Project Interest Rates, by Date of Sale	193
Table 15-10	Operations, Maintenance, Power, and Replacement Costs, by Facility, Composition, and Purpose	199
Table 15-11	Annual Debt Service on Bonds Sold through June 30, 1996	200
Table 15-12	Estimated Unit Water Charges for 1997 and 2000, by Service Area	202
Table 16-1	Visitor-Days Recorded in 1995, by Location	207

❖ ❖ ❖

Figures

❖ ❖ ❖

Figure I-1	Names and Locations of Primary Water Delivery Facilities Current and Projected, June 30, 1996	xx
Figure I-2	Names, Locations, and First Year of Service of Long-Term Contracting Agencies, June 30, 1996	xxvi
Figure 1-1	Key Hydrological Measurements, 1993-1995	7
Figure 4-1	Boundaries of North, West, and South Delta Water Management Programs	36
Figure 5-1	Estimated Total Winter-Run Chinook Salmon Escapement, 1967 through 1995	50
Figure 5-2	Delta Smelt Fall Midwater Trawl Abundance Indexes, 1967 through 1995	50
Figure 5-3	Delta Smelt Summer Tow-Net Indexes, 1959 through 1995	51
Figure 5-4	Splittail Abundance Index, Fall Midwater Trawl, 1962 through 1995	52
Figure 6-1	Water Quality Monitoring Stations in the Sacramento-San Joaquin Delta	58
Figure 6-2	Water Quality Compliance Monitoring Stations in the Suisun Marsh	75
Figure 9-1	Statewide Precipitation by Hydrologic Region, 1994-95 Water Year, in Percentage of Average	100
Figure 9-2	Monthly Inflow into Lake Oroville from Feather River, 1992-93 through 1994-95 Water Years	102
Figure 9-3	Cumulative Inflow into Lake Oroville from Feather River	102
Figure 9-4	End-of-Month Storage in Lake Oroville, 1994 and 1995 Calendar Years	103
Figure 9-5	End-of-Month Storage in San Luis Reservoir, 1994 and 1995 Calendar Years	103
Figure 9-6	Water Pumped at Banks Pumping Plant in 1995, by Month	105
Figure 9-7	Water Diverted from the Sacramento-San Joaquin Delta by State Water Project and Central Valley Project in 1995, by Month	105
Figure 9-8	SWP Water Conveyed to San Joaquin Valley in 1995, by Month	106
Figure 9-9	Water Pumped at Edmonston Pumping Plant in 1995, by Month	106
Figure 10-1	Water Delivered in Calendar Year 1995 and Delivery Locations	118
Figure 11-1	Names, Locations, and Generation Capacity of Primary Power Facilities	134
Figure 14-1	Names and Locations of SWP Recreational Areas	176

❖ ❖ ❖

State of California

Pete Wilson, Governor

The Resources Agency

Douglas P. Wheeler, Secretary for Resources

Department of Water Resources

David N. Kennedy, Director
Robert G. Potter, Chief Deputy Director
Stephen L. Kashiwada, Deputy Director
Raymond D. Hart, Deputy Director
L. Lucinda Chipponeri, Assistant Director for Legislation
Susan N. Weber, Chief Counsel

State Water Project Analysis Office

Donald R. Long, Chief

❖ ❖ ❖

California Water Commission

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

Daniel F. Kriege, Chair, Capitola
Michael D. Madigan, Vice-Chair, San Diego
Stanley M. Barnes, Visalia
Kenneth S. Caldwell, San Marino
Donald C. Cecil, Willows
George Gowgani, San Luis Obispo
Martin A. Matich, San Bernardino
Audrey Z. Tennis, Forest Ranch
Larry Zarian, Glendale

Executive Officer
Raymond E. Barsch

❖ ❖ ❖

Acknowledgments

❖ ❖ ❖

Management of the California State Water Project, an annual publication of the State Water Project Analysis Office, was developed with contributions from staff members of the State Water Project Analysis Office as well as from individuals throughout the Department of Water Resources.

State Water Project Analysis Office

Donald R. Long, Chief
Teresa Clausen
Laura Nelson
Maureen Reed
Darlessia Worthen

Water Rights Contracts and State- Federal Water Contract Activities Branch
Tom Hanson, Chief
Robert Aldridge
Maxine Jones-Yoakum

Bulletin 132 Section
Rick Ramirez, Chief
Jennifer Anaya
Lauren Buffaloe
Kay Mogavero
Nancy Pate-Rahn

SWP Water Rights Contracts Activities Section
John Gage Jr., Chief
Dion Abellon
Kenneth Bucher
Fred Littell
Edgar Najera
Brad Newman

Power Contracts Branch
Dan Herdocia, Chief
Jennifer Bingaman

Power Contracts Management and Off-Aqueduct Projects Section
Coe Hall, Chief
Stuart Chan
Linda Quok
Kathleen Wright

Power and Transmission Contracts Section
Michael Werner, Chief
Bob Garcia
Vicken Kasarjian
Thomas McGivney

Project Cost Branch
Jess Cason, Chief
Carolyn Allen
Gary Petlow

Cost Allocation and Repayment Section
Pedro Villalobos, Chief
Barry Mahoney
Nancy Tagupa
Mike Torabian
Shahram Zarafshar

Financial Analysis and Future Facilities Section
Dave Knock, Chief
Jackie Bodkin
Lori Brown
Do Thuc Nguyen

Project Power Planning Branch
Bruce Johnson, Chief
Jessica Winn

Power Supply and Transmission Planning Section
Ron Shimizu, Chief
Chi Thuy Doan
Mehdi Gandomi
Charlie Kearney
Eddie Ledesma
Bhupinder Sandhu
Jon Seehafer

Power Cost Allocation Section
Richard Latteri, Chief
Jerry Bare
Alvin Eshe
Gurdip Rehal

Project Water Contracts Branch
Dan Flory, Chief
Janet Davis-Matsumoto

Water Deliveries and Schedules Section
Robert Cooke, Chief
Jam Bahar
Christina Kuo
Howard Lockard
Paul Mendoza

Project Water Contracts Section
John Pacheco, Chief
Norm Grundon
Gwen Knittweis
Maureen Sergent
Reza Zamanian

Liaison and Special Projects Section
Teresa Geimer, Chief
Andrea Glasgow
Haydeh Hakim-Edrissi
Elaine Lee
Marie McLean

Project Coordinator
Richard Lerseth

Water Acquisition
Scott Jercich

❖ ❖ ❖

Departmental Divisions and Offices

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

Executive Division
Stephen L. Kashiwada, Deputy Director
L. Lucinda Chipponeri, Assistant Director of Legislation

Division of Operations and Maintenance
Edward F. Huntley, Chief
Donald T. Kurosaka, Assistant to Division Chief
Rolland Williams Sr., Chief, Oroville Field Division
David V. Starks, Chief, Delta Field Division
H. Duane Knittel, Chief, San Luis Field Division
Glen A. Gordon, Chief, San Joaquin Field Division
Lonnie Long, Chief, Southern Field Division

Division of Engineering
Leslie Harder, Chief

Division of Fiscal Services
Chester M. Winn, Chief

Division of Flood Management
George Qualley, Chief

Division of Land and Right of Way
Frank Conti, Chief

Division of Planning and Local Assistance
William Bennett, Chief
Naser J. Bateni, Chief, Northern District
Karl P. Winkler, Chief, Central District
Louis A. Beck, Chief, San Joaquin District
Charles R. White, Chief, Southern District

Division of Safety of Dams
Vernon H. Persson, Chief

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

Office of Water Education
Anita Garcia-Fante, Chief

Environmental Services Office
Randall H. Brown, Chief

Office of Chief Counsel
Susan N. Weber, Chief Counsel

❖ ❖ ❖

Introduction

The State Water Project

Del Valle Dam and Lake

California is a land of contrast; its climate and geography range from desert to alpine to subtropical. In an average year, some areas receive as little as 2 inches of rain while others receive 100 inches or more.

Regardless of the amount of rainfall, people settled in all areas of the State. Since the earliest settlers, California has faced the problem of how best to conserve, control, and deliver water to California's residents. Remains of aqueducts, canals, and dams are still found near some of California's missions. In the early twentieth century, several cities—San Francisco and Los Angeles, for example—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.

Today the SWP, managed by the Department of Water Resources, is the largest state-built, multi-purpose water project in the country. Approximately 19 million of California's 32 million residents receive at least part of their water from the SWP. SWP water irrigates approximately 600,000 acres of farmland. The SWP was designed and built to deliver water, control floods, generate power, provide recreational opportunities, and enhance habitats for fish and wildlife.

Water Delivery Facilities

The SWP depends on a complex system of dams, reservoirs, power plants, pumping plants, canals, and aqueducts to deliver water. Although initial transportation facilities were essentially completed in 1973, other facilities have been constructed since then, 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, 22 pumping and generating plants, and (with scheduled completion of the Coastal Branch Phase II in 1997) nearly 660 miles of aqueducts.

Facilities were designed and built to meet demands for water through 1990; these demands were projected to be about 4.0 million acre-feet. Actual demand, however, has not developed as projected, owing to circumstances such as slower population growth, changes in local use, local water conservation programs, and conjunctive use programs. The most SWP entitlement water delivered to date was about 2.8 million acre-feet in 1989.

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 Upper Feather River, North Bay, South Bay, San Joaquin Valley, Central Coastal, and Southern California 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, but also provide water to the city of Portola and local agencies that have water rights agreements with the Department.

Downstream from the three lakes that begin the SWP is Lake Oroville, the keystone of the SWP. Lake Oroville conserves water from the Feather River watershed. Created by Oroville Dam, the tallest and one of the largest earthfill dams in the United States, Lake Oroville is the project's largest storage facility, with a capacity of about 3.5 million acre-feet. (An acre-foot consists of about 326,000 gallons.)

Figure I-1
Names and Locations of Primary Water Delivery Facilities
Current and Projected, June 30, 1996

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, however, flows into the Governor Edmund G. Brown California Aqueduct. This 444-mile-long aqueduct conveys water to the primarily agricultural lands of San Joaquin Valley and to the primarily 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 Central Valley Project. 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.

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 the USBR.

As the water flows through the San Joaquin Valley, it is raised 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 existing Coastal Branch Aqueduct stub serves agricultural areas west of the California Aqueduct. This branch is being extended to serve municipal and industrial water users in San Luis Obispo and Santa Barbara counties. The extended Coastal Branch is scheduled to be completed in 1997.

The remaining water conveyed by the California Aqueduct is delivered to Southern California, where about two-thirds of California's population lives. 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 destination for recreationists.

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 Castaic Lake, terminus of the West Branch.

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

Tables I-1 through I-5 present statistical information about the primary reservoirs, primary dams, pumping

plants, power plants, and aqueducts. Additional information regarding operation of the plants under full development can be found in Chapter 11.

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 SWP storage, 1,062,183 AF	2,027,800	12,520	65
O'Neill Forebay SWP storage, 29,500 AF	56,400	2,700	12
Los Banos Reservoir	34,600	620	12
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
Quail Lake	7,600	290	3

Additional Construction

The initial facilities of the SWP were designed and constructed to meet projected demands through about 1990. Additional SWP facilities were tentatively scheduled to meet increased demands beyond that date. It was also anticipated that population growth in delivery service areas and areas of water supply 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 additional facilities.

In response to changes in water management policy, the Department continues to reassess plans for the additional facilities to 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 environmental procedures, laws, and regulations.

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

The signing of the Monterey Agreement in December 1994 set the principles for transferring the Kern Fan Element of the Kern Water Bank from the Department to designated agricultural contractors, primarily Kern County Water Agency. The actual transfer is expected to occur in August 1996.

Since December 1994, the Department has documented the groundwater modeling program and the KFE reevaluation, continued essential land management activities, and prepared a wrap-up report for the Kern Water Bank program. The groundwater model reports are complete. The reevaluation report and wrap-up report will be completed in 1996. The KWB program will not be funded after fiscal year 1995-96.

Meanwhile, 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 is currently nearing completion. Upon completion, the Coastal Branch will have the capacity to transport about 50,000 acre-feet 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, approved by voters in 1960); revenue bonds; and capital resources. Repayment of these funds and the operations, maintenance, power, and replacement

Table I-2
Physical Characteristics of Primary Dams

Facility	Crest Elevation (Feet)	Structural Height (Feet)	Crest Length (Feet)	Structural Volume (in 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
Quail	3,330	45	6,600	

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)	85-101	9,120	120,000
Hyatt	3 (p-g)	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)	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 (under construction) (a	6	521	134	10,500
Bluestone (under construction) (a	6	481	134	10,500
Polonio Pass (under construction) (a	6	533	134	10,500
Buena Vista (a	10	205	5,405	144,500
Teerink (a	9	233	5,445	150,000
Chrisman (a	9	518	4,995	330,000
Edmonston (a	14	1,926	4,480	1,120,000
Oso	8	231	3,252	93,800
Pearblossom	9	539-546	2,575	203,200

a) These plants have one unit in reserve.

Table I-4
Power Plant Characteristics, by Type of 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)	85-101	17,400	115,000
Hyatt	6 (3 p-g)	410-675	16,950	644,250
Gianelli	8 p-g	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
Thermal				
Reid Gardner, Unit 4	1 (a			250,000
SWP ownership share				169,500

a) Life of the plant is expected to extend through 2013.

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 (under construction)	0.0	14.8 (a	98.3	2.7	115.8
Subtotal	9.2	23.9	104.7	9.9	147.7
Total	15.7	417.3	205.8	23.2	662.0

a) Existing

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 Agreement, the current combined maximum annual entitlement totals 4,172,786 acre-feet. 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.

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.

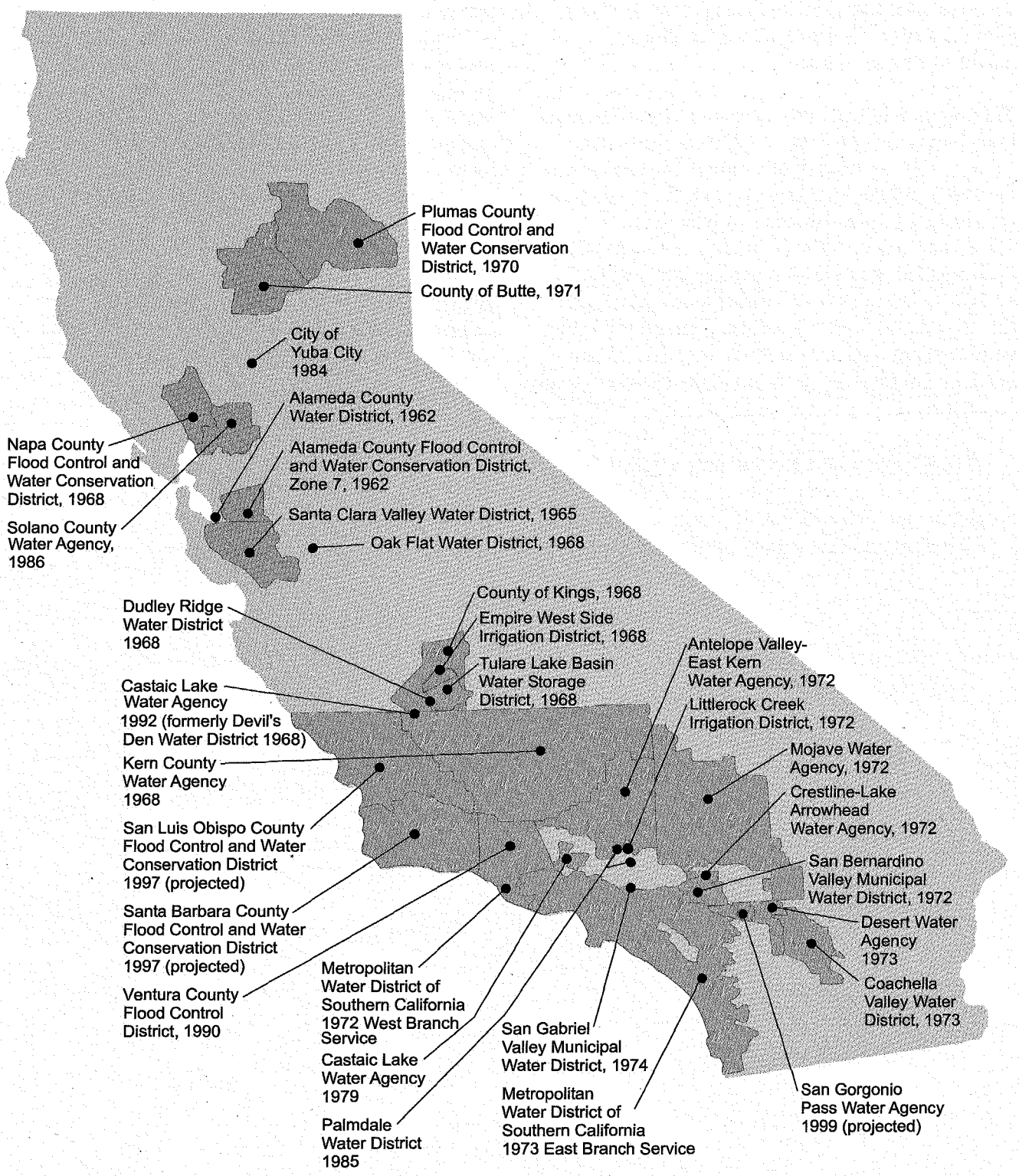


Figure I-2
Names, Locations, and First Year of Service of Long-Term Contracting Agencies, June 30, 1996

Table I-6
Long-Term Water Supply Contracting Agencies, by Area

Contracting Agency	Cumulative Deliveries through December 31, 1995 (Acre-Feet) (a	Maximum Annual Entitlement (Acre-Feet)	Payments through December 31, 1995 (Dollars)	Gross Area as of July 1, 1996 (Acres)	Assessed Valuation 1995-96 (Dollars) (b	Estimated Population July 1, 1996
Upper Feather River Area						
City of Yuba City	5,384	9,600	1,305,016	5,107	1,126,662,000	34,350
County of Butte	7,627	27,500	422,549	1,069,000	6,239,500,000	172,600
Plumas County Flood Control and Water Conservation District	9,881	2,700	846,199	1,676,056 (c	1,973,575,825 (c	21,200
Subtotal	22,892	39,800	2,573,764	2,750,163	9,339,737,825	228,150
North Bay Area						
Napa County Flood Control and Water Conservation District	158,022	25,000	31,262,202	508,000	9,453,251,869	120,604
Solano County Water Agency	186,636	42,000	36,289,863	537,600	18,883,562,044	377,560
Subtotal	344,658	67,000	67,552,065	1,045,600	28,336,813,913	498,164
South Bay Area						
Alameda County Flood Control and Water Conservation District-Zone 7	597,560	46,000	44,551,292	272,000	12,592,234,275	161,600
Alameda County Water District	657,453	42,000	49,126,027	64,640	20,194,979,000	286,247
Santa Clara Valley Water District	2,515,682	100,000	159,813,277	833,000	103,400,000,000	1,612,000
Subtotal	3,770,695	188,000	253,490,596	1,169,640	136,187,213,275	2,059,847
San Joaquin Valley Area						
County of Kings	63,822	4,000	2,194,738	893,300	3,858,990,456	114,191
Castaic Lake Water Agency	330,847				10,872,299,000	
Dudley Ridge Water District	1,356,631	57,700	35,977,575	29,970	(e	50
Empire West Side Irrigation District	87,007	3,000	1,962,568	7,400	(e	50
Kern County Water Agency	20,797,204	1,153,400	825,505,492	5,161,000	30,540,999,000	612,300
Oak Flat Water District	140,388	5,700	2,893,079	4,000	(e	50
Tulare Lake Basin Water Storage District	2,804,398	118,500	70,170,033	189,200	(e	50
Subtotal	25,580,297	1,342,300	938,703,485	6,284,870	45,272,288,456	726,691
Central Coastal Area						
San Luis Obispo County Flood Control and Water Conservation District	0	25,000	18,233,172	2,131,300	14,347,448,466	232,428
Santa Barbara County Flood Control and Water Conservation District	1,240	45,486	36,035,922	1,775,296	10,296,310,227	394,580
Subtotal	1,240	70,486	54,269,094	3,906,596	24,643,758,693	627,008
Southern California Area						
Antelope Valley-East Kern Water Agency	857,244	138,400	183,798,733	1,525,029	12,027,826,432	230,000
Castaic Lake Water Agency (d	240,279	54,200	86,389,874	133,700	10,872,299,000	150,250
Coachella Valley Water District	319,070	23,100	77,873,347	637,600	11,132,616,000	200,000
Crestline-Lake Arrowhead Water Agency	29,692	5,800	11,860,707	55,100	1,500,527,807	25,000
Desert Water Agency	513,184	38,100	105,716,644	208,800	4,391,560,000	82,000
Littlerock Creek Irrigation District	12,309	2,300	3,268,883	10,000	106,085,538	2,900
Metropolitan Water District of Southern California	14,519,920	2,011,500	3,949,298,097	3,289,593 (f	671,699,559,000 (f	14,500,000 (f
Mojave Water Agency	126,875	50,800	80,282,273	3,160,400	13,264,223	333,000
Palmdale Water District	60,509	17,300	24,202,549	73,900	1,956,651,000	90,000
San Bernardino Valley Municipal Water District	281,139	102,600	201,138,457	210,000	14,400,000,000	600,000
San Gabriel Valley Municipal Water District	174,287	28,800	62,537,765	17,335	7,834,221,597	191,000
San Gorgonio Pass Water Agency	0	17,300	29,695,241	140,600	1,945,425,320	44,600
Ventura County Flood Control District	5,824	20,000	23,946,199	308,252	21,957,265,429	457,000
Subtotal	17,140,332	2,510,200	4,840,008,769	9,803,609	759,837,301,346	16,905,750
Total, State Water Project	46,860,114	4,217,786	6,156,597,773	24,960,478 (g	1,003,617,113,508 (g	21,045,610 (g
Net Total, SWP Service Area				23,790,838 (h	(i	18,840,929 (h
Total, State of California				100,314,000	1,876,018,000,000 (j	32,140,000
Percentage, Net SWP of Total California				24		59

a) All water delivered to long-term SWP contractors, including current and deferred entitlement, surplus, unscheduled, emergency relief, exchange, and non-SWP water delivered through SWP facilities to Napa County Flood Control and Water Conservation District.
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) District includes land in the San Joaquin Valley Area formerly known as Devil's Den Water District.
e) Assessed valuation not available on an agency area breakdown.
f) Total for MWDSC, including Calleguas Municipal Water District, which is common to MWDSC 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.
h) Excludes duplicate values where agencies have overlapping boundaries.
i) Data no longer available.
j) Source: *California Statistical Abstract*, published by the State Department of Finance in November 1996.

Part I
The Year in Review

Chapter 1
Executive Summary

1995 flood damage at Aqueduct Mile 157

The Bulletin 132 series began in 1963 and reported the first deliveries of water by the new State Water Project, which was still under construction. Bulletin 132-96, *Management of the California State Water Project*, continues the series with the thirty-fourth edition of the Bulletin. It reports planning, constructing, financing, managing, and operating activities of the State Water Project. The SWP is operated and maintained by the California Department of Water Resources.

Bulletin 132-96 also discusses significant SWP events and reports on issues that affect SWP management and operations. It covers water year 1995 (October 1, 1994, to September 30, 1995), calendar year 1995, and the fiscal year (July 1, 1995, to June 30, 1996). Because these reporting periods overlap to some degree, some events may be discussed in more than one bulletin.

A series of Pacific storms during November 1994 got water year 1995 off to a good start. Statewide precipitation from October 1 to January 1 was 95 percent of average for that date. Although seasonal runoff got a slow start, runoff during December 1994 brought seasonal totals up to 45 percent of average compared to 37 percent last year.

Intense warm winter storms began January 3, 1995, and lasted through January 16. The storms caused widespread flooding statewide. Streets and highways closed, mud and debris oozed across several areas and restricted operations in numerous rivers and harbors, and homes and businesses were evacuated. Storm drainage systems and small streams were overloaded. Guerneville, a small community in Northern California, flooded when the Russian River rose to 15 feet above flood stage. The Napa River flooded at Napa and St. Helena. The Sacramento River inundated many areas and damaged miles of levees. In the northern Sierra, 40 percent of an average year's precipitation fell during this time. In Southern California, the Department requested emergency assistance from the U.S. Army Corps of Engineers to remove debris around bridges. The Department declared a flood mobilization beginning January 7. Flood Operations Center staff remained on alert status for 11 days. They forecast river stages, acted as a central clearing house for flood-related information, and warned local agencies and citizens of impending high water.

The January storms improved water supply conditions significantly. Seasonal water totals jumped from 95 percent of average on January 1 to 170 percent by midmonth. Storage increased from 43 percent of capacity on January 1 to 90 percent by the end of the month.

After a dry February, March was another wet month—the wettest March in 70 years of record keeping. Total seasonal precipitation at the end of March was 160 percent of the seasonal average. January and March figures showed three times average precipitation statewide. With March being another wet month and the reservoirs at or near their maximum allowable storage from the January rains, intense storms along the Central Coast and inland Central Valley caused severe flooding in the area.

The Arroyo Pasajero was particularly hard hit. Flood waters filled the retention basin, flooded nearby farmland and local roads, moved railroad tracks, ruptured an oil pipeline, and caused major land erosion. The erosion undermined the I-5 bridge foundation resulting in its collapse. The bridge collapse caused the death of seven people traveling along I-5. The California Aqueduct also sustained substantial damage costing millions of dollars in repairs and silt removal.

More precipitation during April and May, along with cooler weather that maintained snowpack, kept SWP storage high and deliveries low.

Normal June and July temperatures created late runoff and caused some high river flows in the San

Joaquin River area. Statewide runoff during June was 220 percent of average; water storage on July 1 was 120 percent of average for the date. July runoff was 330 percent of the monthly average. By August 1, major reservoir storage statewide averaged 129 percent of average compared to 75 percent the previous year. Runoff continued during August at more than 200 percent the monthly average.

By the end of water year 1995, SWP reservoir storage was about 4.63 million acre-feet—1.95 million acre-feet more than the previous year and the highest since 1983. Accumulated runoff statewide climbed to 185 percent making the 1995 water year the third wettest since 1906 when runoff records began. Above-average water conditions continued throughout 1995 and allowed more flexibility in project water operations. Figure 1-1 compares key hydrological measurements of 1993, 1994, and 1995 and illustrates the extreme variation in annual operating conditions that the Department must manage.

1995 Water Deliveries

In 1995, the SWP delivered 2,972,500 acre-feet of water to 25 long-term contractors and 15 other agencies. That amount includes 1,889,092 acre-feet of entitlement and 2,575 acre-feet of recreation/fish and wildlife water. It also includes 15,589 acre-feet of operational flood release water as well as 922,913 acre-feet of nonentitlement water delivered to satisfy agreements made with SWP contractors and other agencies, including USBR. Table 1-1 presents information about water deliveries through 1995.

Entitlement Water

Entitlement water delivered includes 1,889,092 acre-feet of 1995 entitlement water; 53,001 acre-feet of 1994 carryover entitlement water delivered in 1995; 25,000 acre-feet of water delivered under Article 14(b) of the long-term water supply contracts; and 64,330 acre-feet of interruptible water to three long-term water contractors. Interruptible entitlement water is a new category developed as part of the Monterey Agreement.

Transfers and exchanges of entitlement water in 1995 include 111,721 acre-feet of entitlement water transferred between five SWP long-term contractors and one non-SWP water agency, and 14,938 acre-feet of entitlement water delivered through water exchanges.

The SWP also delivered 30,964 acre-feet of local, general wheeling, and operational flood-release water.

Water for Recreation, Fish, and Wildlife

The SWP delivered 2,575 acre-feet of water for recreational use and fish and wildlife as follows:

- 573 acre-feet for recreational use at Lake Del Valle, O'Neill Forebay, Silverwood Lake, Lake Perris, and Castaic Lake;
- 1,223 acre-feet to Castaic Lagoon, an impoundment downstream from Castaic Lake devoted entirely to recreation;
- 718 acre-feet for wildlife management in the Pilibos Wildlife Area near O'Neill Forebay;
- 19 acre-feet to maintain a trout fishery in Piru Creek; and
- 42 acre-feet for the Gamebird Heritage Program at the Kern Fan Element.

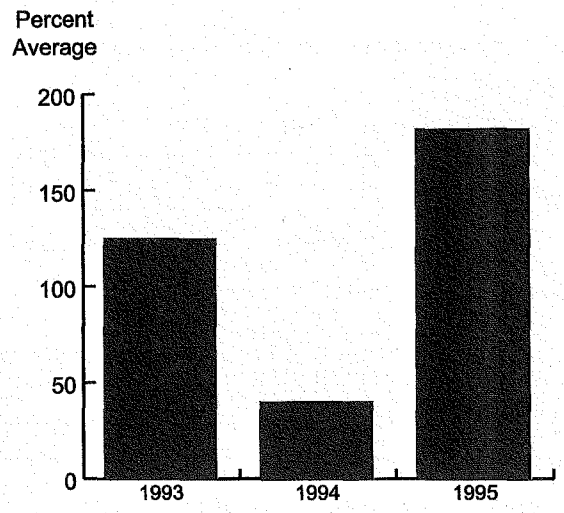
Non-SWP Water Deliveries

In 1995, SWP facilities were used to deliver non-SWP water for other agencies, including the Central Valley Project. This category also includes non-SWP water transferred from one agency to another.

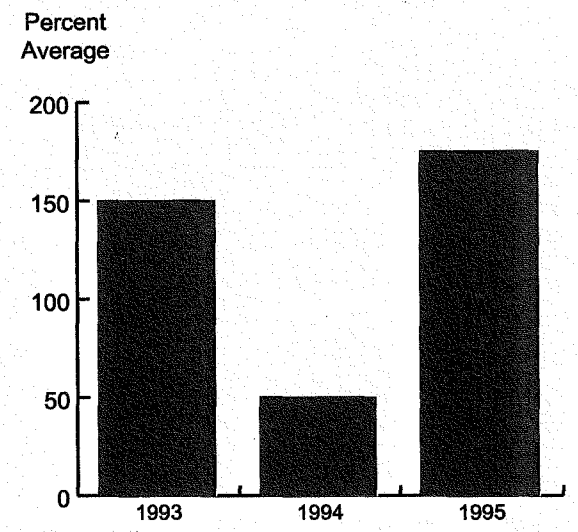
In 1995, the Department conveyed 10,525 acre-feet of Central Valley Project water through SWP facilities. The Department regularly enters into agreements for conveying CVP water, such as agreements with contractors receiving water from the US Bureau of Reclamation through the Cross Valley Canal, a water conveyance facility that connects with the California Aqueduct near Tupman in Kern County. Other agencies or corporations, including the US Department of Veterans Affairs, US Fish and Wildlife Service, and Musco Olive Products, Inc., also receive CVP water through agreements between the Department and USBR.

Feather River Water Rights Settlement Agreements

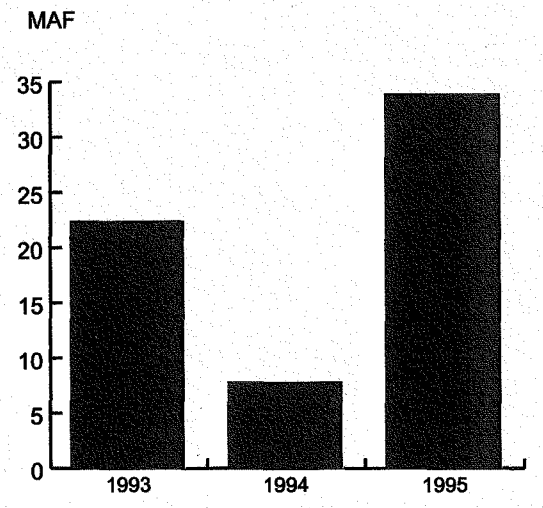
Nine agencies in the Feather River service area received 860,077 acre-feet of regulated local supplies under agreements with the Department. Those agen-



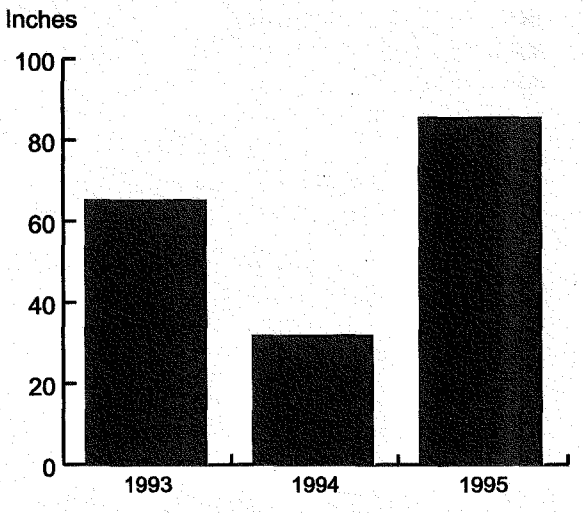
Statewide Runoff



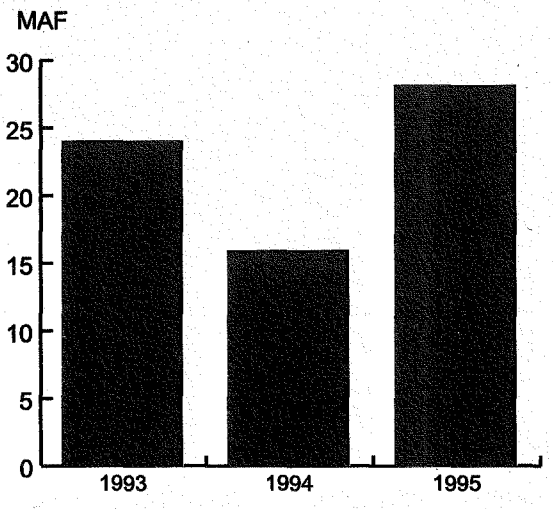
April 1 Snowpack Water Content



Sacramento River Unimpaired Runoff



Northern Sierra Precipitation



155 Major Statewide Reservoir Storage at September 30, 1993-1995

Figure 1-1
Key Hydrological Measurements, 1993-1995

Table 1-1
Water Delivered, by Category, 1962 through 1995

	Water Delivered (Acre-feet)								
	Entitlement Water (a			Other Water Deliveries					
				Surplus and Unscheduled					
Year	Municipal and Industrial (1)	Agricultural (2)	Total (3)	Municipal/ Industrial (4)	Agricultural (5)	Other Water (b (6)	Feather River Diversions (c (7)	Recreation Water (8)	Total Deliveries (9)
1962	--	--	--	--	--	18,289	--	--	18,289
1963	--	--	--	--	--	22,456	--	--	22,456
1964	--	--	--	--	--	32,507	--	--	32,507
1965	--	--	--	--	--	44,105	--	--	44,105
1966	--	--	--	--	--	67,928	--	--	67,928
1967	5,747	5,791	11,538	0	0	53,605	--	--	65,143
1968	46,472	125,237	171,709	10,000	111,534	14,777	866,926	--	1,174,946
1969	34,434	158,586	193,020	0	72,397	18,829	794,374	--	1,078,620
1970	47,996	185,997	233,993	0	133,024	38,080	759,759	--	1,164,856
1971	85,286	272,054	357,340	2,400	293,619	44,119	778,362	8	1,475,848
1972	181,066	430,735	611,801	22,205	401,759	66,638	817,398	6,489	1,926,290
1973	293,824	400,564	694,388	3,161	293,255	42,511	800,743	1,155	1,835,213
1974	418,521	455,556	874,077	4,753	412,923	46,224	911,613	2,118	2,251,708
1975	641,621	582,369	1,223,990	21,043	601,859	63,793	862,218	3,377	2,776,280
1976	818,588	554,414	1,373,002	32,488	547,622	115,217	946,440	1,745	3,016,514
1977	280,919	293,236	574,155	0	0	389,065	581,994	1,111	1,546,325
1978	742,385	710,314	1,452,699	3,566	13,348	121,225	786,517	1,691	2,379,046
1979	690,659	969,237	1,659,896	66,081	582,308	187,630	882,549	1,766	3,380,230
1980	730,545	799,204	1,529,749	19,722	384,835	46,459	875,045	2,131	2,857,941
1981	1,057,273	852,289	1,909,562	12,000	896,428	279,161	838,557	4,688	3,940,396
1982	928,721	821,303	1,750,024	0	215,873	154,882	776,330	4,646	2,901,755
1983	483,499	701,370	1,184,869	0	13,019	181,453	602,905	7,849	1,990,095
1984	725,925	862,694	1,588,619	3,663	259,254	381,024	832,332	7,040	3,071,932
1985	992,538	1,002,915	1,995,453	9,638	298,034	404,842	870,008	4,033	3,582,008
1986	998,611	997,025	1,995,636	2,595	34,025	193,606	791,737	3,865	3,021,464
1987	1,096,368	1,033,718	2,130,086	6,949	107,958	377,592	831,947	7,672	3,462,204
1988	1,316,820	1,068,302	2,385,122	0	0	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	62,836	860,077	2,575	2,972,500
Total	**20,662,224**	**18,903,603**	**39,565,827**	**224,941**	**5,673,164**	**6,078,207**	**22,444,244**	**104,538**	**74,090,921**

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

cies hold water rights to Feather River water that predate operation of the SWP.

Construction and Maintenance

Coastal Branch Construction

The Department continued construction of the Coastal Branch Phase II. This addition to the State Water Project will connect Santa Barbara and San Luis Obispo counties to the California Aqueduct. Ongoing issues include environmental protection, technical challenges, and right-of-way negotiations. Environmental issues involved protection of numerous native ecological communities, stream crossings, and cultural remains. The Department prepared several addenda and a supplement to the final EIR to address additional issues.

Project design and construction from Arroyo Grande Creek to Tank Site 5 (reaches 5B and 6—the last 28 miles of the project) were turned over to the Central Coast Water Authority for completion. The Joint Powers Agreement between the Department and CCWA provided the legal framework for work done by CCWA. The Professional Engineers in California Government (the union that represents State engineers) filed a lawsuit in June 1995 alleging that the agreement between the Department and CCWA was illegal and in violation of the State Constitution. In November 1995, three of four substantive charges were dismissed. An evidentiary hearing to decide the fourth was held in February 1996. The court decided that the Department did not enter into the JPA to evade the State Constitution's civil service provisions against contracting out work under certain conditions and ruled in favor of the Department and CCWA.

Construction and installation of the various pipelines, tunnels, control structures, water tanks, and other components continue. Completion is expected in early 1997.

East Branch Extension

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. It will benefit the San Bernardino Valley Municipal Water District and SGPWA. The project was determined to be feasible and will be developed in two phases.

The East Branch Extension will help meet water needs of the area for the next few decades, reduce groundwater overdraft, and provide additional water service flexibility to the San Bernardino District.

The East Branch Extension will incorporate a 19.5-mile existing pipe built by the San Bernardino District into a 33-mile pipeline. The extension will link portions of the eastern part of SBVMWD and the eastern part of SGPWA to the California Aqueduct. The project schedule anticipates final design by July 1996 with pipelines and pump stations operational by February 1999.

Monterey Agreement

The Department and SWP water contractors reached an understanding called the Monterey Agreement on December 1, 1994. This agreement established the Monterey Principles for amending the Department's SWP water contracts with long-term water contractors.

The Monterey Agreement grew out of water allocation concerns that intensified during the 1987-1992 drought. Rather than negotiate only water allocation issues, the Department and water contractors decided on a major revision to SWP long-term contracts and their administration—in essence, to update management of the SWP. The Monterey Agreement was released to the public December 16, 1994, in the form of 14 principles (see sidebar, State Water Project "Monterey Agreement"). Bulletin 132-95, Chapter 1, explains the Monterey Agreement in detail.

The Environmental Impact Report

A draft program environmental impact report, *Implementation of the Monterey Agreement*, was prepared by Central Coast Water Authority and published in May 1995; the final EIR was published in October 1995.

Legal Challenges

Legal challenges slowed implementation of the Monterey Agreement during 1995 and the first 6 months of 1996. The Planning and Conservation

League filed a lawsuit in California Superior Court in December 1995 challenging the Monterey Agreement, which was originally designed to be effective when all lawsuits challenging it were resolved. The lawsuit alleged that the EIR was inadequate; that the lead agency for the EIR—Central Coast Water Authority—was improperly named; and that the Kern Water Bank was improperly transferred to Kern County Water Agency.

In May 1995, San Bernardino Municipal Water District filed a cross-complaint, alleging that the Monterey Agreement represents a breach of its water supply contract and that the Department acted in excess of its authority in agreeing to the principles.

In May 1996, the Court ruled that although the Department should have served as lead agency for the EIR, this was a harmless error and did not warrant revisions of the EIR. The court also found in favor of the Department on the Kern Water Bank action, finding that plaintiffs had improperly failed to join Kern County Water Agency, an indispensable party.

The San Bernardino Valley Municipal Water District cross-complaint is still pending.

Amendments to Water Contracts

Despite legal challenges, the goals of the Monterey Agreement—to increase reliability of existing water supplies, provide stronger financial management of the SWP, and increase water management flexibility

State Water Project "Monterey Agreement"

1. **Water Allocations.** Allocations are based on entitlement.
2. **Water Allocations When Requests Exceed Available Supply.** Initial agricultural deficiency is eliminated; Article 18(b) [permanent shortage provision] is eliminated.
3. **Kern Water Bank.** Kern Fan Element property is transferred to agricultural contractors; agricultural contractors permanently retire 45,000 acre-feet of entitlement.
4. **Permanent Sales of Entitlement.** Agricultural contractors commit to allow up to 130,000 acre-feet of entitlement to be sold to urban contractors, on a willing buyer-willing seller basis.
5. **Restructuring to Ensure Financial Integrity of the SWP.** Contractor payments in excess of SWP financial obligations are returned to the contractors as follows: money for agricultural contractors is put into a trust fund for rate management; money for urban contractors is distributed directly to them.
6. **Terminal Reservoirs-Points of Delivery.** The contractors paying for the terminal reservoirs gain increased control/management of those reservoirs.
7. **Interruptible Water Service Program.** Current categories of surplus, wet weather, and Article 12(d) [shortage makeup provision] water are replaced by a single category of interruptible water, which is allocated based on entitlement and delivered at the melded SWP power rate.
8. **Nonproject Water Transport.** Contractors have the right to transport nonproject water in SWP facilities, at the melded SWP power rate.
9. **Water Storage Outside Service Area.** Rules for carryover in SWP conservation facilities are expanded; there are no limits on groundwater storage of SWP water outside a contractor's service area.
10. **Turn-Back Water Pool Sales.** An annual turn-back pool is created under which water allocated but not needed by a contractor may be sold to interested contractors and/or the Department at a percentage of the Delta Water Rate, or to noncontractors.
11. **Conforming Contract Amendments.** SWP contracts are to be amended to conform to these principles.
12. **Project Improvements.** The Department reaffirms its obligation to complete the SWP.
13. **Integrated Package.** The principles come as a package—a contractor can participate in all or none of the provisions.
14. **No Precedent.** If the amendments are not entered into, the parties agree not to use these principles in court proceedings.

by providing more tools to local water agencies—came closer to reality as an increasing number of contractors amended their water contracts. Thirteen SWP water contractors signed Monterey Agreements to their water contracts during December 1995; another seven SWP water contractors signed during February 1996. See Chapter 10 for a complete listing of these 20 water contractors.

Operational Changes

As discussed previously in Bulletin 132-95 (Chapter 1), implementation of the Agreement will result in certain changes to operation and administration of the SWP. Full execution of these provisions, except water allocation, will occur once litigation is resolved; water allocation provisions are effective as soon as contractors sign the Monterey Amendments to their contracts.

Water Allocations and Water Service. In years of shortage, agricultural entitlement water will no longer be automatically the first to be reduced. Water allocation will be based on entitlements.

Surplus, wet weather, and Article 12(d) water will be replaced by a single category of interruptible water, allocated on the basis of entitlement and delivered at the same power rate as entitlement water.

Transfers of Entitlement and Land. An annual entitlement of 45,000 acre-feet of agricultural water—4,330 acre-feet from Dudley Ridge Water District and 40,670 acre-feet from Kern County Water Agency—will be permanently transferred to the Department and retired. One hundred and thirty thousand acre-feet of agricultural entitlement water will be available for permanent sale to contractors for urban use.

The Kern Fan Element of the Kern Water Bank will be transferred to the Kern County Water Agency. The actual transfer is expected to occur in August 1996.

Financial Restructuring. The Department will develop financial programs with SWP funds to establish an operating reserve; a SWP facilities capital account to support certain otherwise unfunded planning studies; a water rate management program to reduce charges for all signing contractors when SWP cash flow permits; and a rate management trust fund for agricultural contractors.

Regional Operational Flexibility. The contractors paying for the Castaic Lake and Lake Perris terminal reservoirs—Metropolitan Water District of Southern California, Ventura County Flood Control District, and Castaic Lake Water Agency—will increase their control and management of reservoir storage capacities.

Water Storage and Transportation. Contractors may transport nonproject water in SWP facilities at the melded SWP power rate. Carryover rules for SWP surface conservation reservoirs will expand, allowing year-to-year storage by contractors when space is available. Within certain constraints, SWP water may be stored from year to year in non-SWP surface storage facilities that lie outside a contractor's service area for later use within the service area. There will be no limits on groundwater storage of SWP water outside a contractor's service area for later use within the service area.

Contractors not storing in any year can participate in an annual turn-back pool of allocated but unneeded water, which will be sold at a percentage of the Delta Water Rate to either the Department or other contractors. Contractors can also temporarily, for a period of years, reduce their Table A entitlement and receive rate reductions.

In early 1996, the Department initiated an interim program to allow SWP contractors to sell portions of the 1996 entitlement water back to the Department or to other contractors. The criteria to sell water are part of the interim implementation guidelines to the 1994 Monterey Principles. Participation in the program requires that the contractors do not store SWP water outside their service area or carry over entitlement water from 1995. Other contractors have first priority to turn-back water. The Department may purchase the remainder at the same price offered to SWP contractors or it may be sold on the open market to the highest bidder if not purchased by the Department.

Delta Planning and Activities

The Department, along with other State and federal agencies, continually develops and implements programs designed to preserve the Delta both as a unique environmental resource and as one of California's major water supply sources. Guided by the Governor's 1992 water policy to "fix the Delta," these Delta planning programs emphasize short-term interim solutions to improve conditions in the Delta while long-term solutions to Bay-Delta problems are investigated and evaluated.

The historic *Principles for Agreement on Bay-Delta Standards* was signed December 15, 1994, by CALFED (federal and State government resource managers) and representatives of several urban, agricultural, and environmental groups. The agreement established new outflow standards, modified implementation of the Endangered Species Act to increase water project operations flexibility, contained a funding mechanism (Category III) for non-flow-related measures, and formed a new Bay-Delta Advisory Council. The 31-citizen advisory group, selected from California's agricultural, environmental, urban, business, fishing, and other interests, will provide input to CALFED. The Principles for Agreement are intended to be effective for 3 years until the adoption of final Delta water quality standards. The Department and USBR agreed to operate the projects in accordance with the agreement, beginning in January 1995.

The agreement guided the State Water Resources Control Board to draft the *1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Estuary*, released December 15, 1994, and adopted May 22, 1995. Water quality in the Delta and Suisun Marsh is protected under the SWRCB Decision 1485 as amended by Water Right Order 95-1. In June 1995, SWRCB adopted Water Right Order 95-6 to be consistent with the *Principles for Agreement* and its *1995 Water Quality Control Plan*. In 1995, all existing and amended D-1485 water quality requirements were met.

Both the CVP and SWP operated to comply with specific operations criteria set in the 1995 biological opinions for winter-run chinook salmon and delta smelt. The opinions were revised to conform with the agreement and the *1995 Water Quality Control Plan* on May 17, 1995, and March 6, 1995, by the National Marine Fisheries Service and U.S. Fish and Wildlife Service. Changes to the revised opinions include export/inflow ratios replacing QWEST, the cross channel gate being closed during fall and early winter, and revised San Joaquin River pulse flows. In addition, the winter-run incidental-take statement now includes a new action threshold at the 1-percent (warning) level as well as the 2-percent (reconsultation) level of expected take. Although the USFWS proposed listing the splittail under ESA in 1994, no action was taken in 1995 because of a budget-related moratorium on new listings.

The agreement further provided for an expanded real-time monitoring program and a new Suisun Ecological Workgroup. The real-time monitoring program tracks fish movements and conditions in the estuary to protect targeted fish species from becoming entrained at the SWP and CVP facilities. In 1995, real-time monitoring specifically targeted winter-run salmon, delta smelt, and the Sacramento splittail. On June 4 and 5, 1995, unprecedented numbers of young-of-the-year splittail collected at Mossdale resulted in 3 days of reduced exports beginning June 11. In future years, data collection will be used to determine if a predictive relationship exists between the magnitude of fisheries losses in SWP and CVP salvage operations and catches of targeted species at designated locations in the Delta.

The Suisun Ecological Workgroup, a scientific advisory group, was established at the request of SWRCB in the 1995 Water Quality Control Plan and order 95-6 to review the basis of the existing Suisun Marsh salinity standards and recommend comprehensive brackish-marsh salinity standards and wetland management strategies by August 1997. During fall 1995, the Department identified six goals from a list of nine general objectives advanced by the SWRCB to facilitate SEW's task of evaluating and recommending salinity objectives. SEW met six times in 1995 and formed five technical subcommittees in October to focus on several different components of the Suisun Marsh ecology.

Delta Programs

The Department developed planning programs to manage water in three distinct Delta areas: the south, north, and west Delta.

The Interim South Delta Program is designed to improve hydraulic conditions, water levels, quality, and circulation for local agricultural diversions in south Delta channels. This will increase operational flexibility for diverting water into Clifton Court Forebay and improve the reliability of scheduled diversions at Banks Pumping Plant. The Department and USBR prepared a new draft environmental impact report/statement for the ISDP that is expected to be released for public review and comment in August 1996. The final EIR/EIS should be completed in 1997.

In fall 1995, the Department chose to suspend the Interim North Delta Program planning activities in deference to the CALFED Bay-Delta Program. The CALFED Bay-Delta Program is expected to address issues identified in the INDP in a comprehensive manner, with input from involved stakeholders, regulatory agencies, and cooperating agencies.

The West Delta Program will implement different land-use management practices to control subsidence and soil erosion on Sherman and Twitchell islands and also provide diverse habitat for wildlife and waterfowl. In addition, property acquired and potential habitat developed through the Department could be available as mitigation for impacts associated with ongoing Delta water management programs.

The California Legislature passed the Delta Flood Protection Act in March 1988, which appropriates $12 million each year until January 1999, to develop two programs to prevent flooding in the Delta—the Delta Levee Maintenance Subventions Program and the Special Flood Control Program. The Special Flood Control Program will protect the towns of Walnut Grove and Thornton and the eight islands of the western Delta. The Delta Levee Maintenance Subventions Program will rehabilitate threatened levee sites and provide short-term protection for the western Delta until long-term improvements can be made. Some of the activities under the program include encroachment documentation, subsidence investigation, upland relocation of dredged material, and levee upgrades.

As specified under the South Delta Water Agency Agreement, the South Delta Temporary Barriers Project, initiated in 1991, was designed to resolve local south Delta water supply issues within the larger context of the Department's water banking program. The barriers would improve local water levels, quality and circulation patterns, protect fishery resources, and improve agricultural operations. The program proposes to construct up to four barriers in the south Delta during a 5-year test period. In past years, three temporary barriers were installed on Middle River, Old River at Tracy, and Old River at head. Due to high San Joaquin River flows in 1995, the Old River at head barrier was not installed; installation of the barriers on Middle River and Old River near Tracy were delayed until August and removed by October 15. The Department applied for permits with DFG and the Army Corps of Engineers for the fourth and last barrier proposed on Grant Line Canal east of the Tracy Boulevard Bridge in 1995. Installation of the Grant Line barrier was postponed due to concern over nearby endangered Swainson's hawk nesting sites. The temporary barrier project was scheduled to end in 1995; however, the Department received a 5-year program extension (1996-2000).

The Delta

The 738,000-acre Delta, interlaced with hundreds of miles of waterways, receives runoff from 40 percent of the State's land area, including runoff and flood flows from the water basins of the Sacramento, San Joaquin, Mokelumne, and Cosumnes rivers. As part of an interconnected estuary system that includes Suisun Marsh and San Francisco Bay, the Delta supports hundreds of species of fish, wildlife, and plants. The Delta also serves as part of an important water transport system, which includes the SWP, that delivers water to over 20 million Californians.

Department Reorganization—Division of Engineering

The historic mission of the Division of Design and Construction was associated with the construction of very large facilities for the SWP. Construction of the initial facilities of the SWP began in 1957 with the relocation of the Western Pacific Railroad yard and Highway 70 near Oroville. In 1963, work began on the California Aqueduct (later renamed the Governor Edmund G. Brown California Aqueduct) and, by 1968, the SWP delivered water to long-term contractors in the San Joaquin Valley. From the early 1970s

to the late 1980s, design and construction activities focused 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.

During the 1990s, design and construction activities have focused on repairing and replacing components of existing facilities, constructing Phase II of the Coastal Branch, and possibly extending the SWP to the San Gorgonio Pass service area. In the future, the Division's workload will change substantially—projects will be fewer, smaller in scale, and require less time and money than previous work.

The Department contracted with Cooperative Personnel Services to help the Division manage the projected changes and decreased workload. CPS issued a report in January 1996 that recommended several ways for the Division to adapt to the changing workload. The Division initiated three important steps to begin implementing the recommendations: (1) a new name was adopted—the Division of Design and Construction became the Division of Engineering; (2) an interim organizational structure was developed and became effective March 11, 1996; and (3) a restructuring subcommittee was established to refine the interim organizational structure and implement the recommendations of the CPS report. The subcommittee completed a draft report, that included 36 recommendations. The report is expected to be printed and distributed in September 1996.

Part II

State Water Project Management

Chapter 2

Future Storage and Delivery Capabilities

Partially completed Tank 2 of Coastal Branch Phase II

Significant Events

- Work on other future storage or delivery projects has been either deferred pending developments in the CALFED process or transferred to SWP contractors in accordance with the Monterey Agreement.
- The Department and the Central Coast Water Authority are nearing completion of construction of Coastal Branch, Phase II.

To meet the water deliveries 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. In planning and developing those facilities, however, the Department faces two significant challenges: (1) finding technically suitable projects; and (2) satisfying many complex environmental procedures, laws, and regulations. Many of the environmental concerns center on the Sacramento-San Joaquin Delta. The Delta is the critical link in the SWP conveyance system. As such, developing additional SWP facilities is dependent upon resolution of Delta conflicts.

Meeting contractual water delivery commitments remains a priority with the Department. Two planning programs are intended to lay the groundwork for developing additional State Water Project water supplies: the SWP Planning Strategy and the Service Area Impact Study. The SWP Planning Strategy is designed to help the Department determine the best means to develop and implement a SWP water supply plan for at least the next 30 years. The objective of the Service Area Impact Study is to update a 1985 study and provide information to help planners, SWP contractors, and other SWP water recipients satisfy environmental requirements for new water development projects. The progress of the Service Area Impact Study and the SWP Planning Strategy is dependent upon the evolution of the CALFED Bay-Delta Program.

The CALFED Bay-Delta Program is developing the 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 agreement's signers known collectively as CALFED became responsible for setting water quality standards and developing long-term solutions to fish and wildlife issues, water supply reliability, flood control, and water quality problems in the estuary.

The Department is assessing the relationship of the Service Area Impact Study and the SWP Planning Strategy to the CALFED Bay-Delta Program.

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.

As currently defined, the SWP Planning Strategy would address many critical issues, including regulatory laws and processes, financial mechanisms, individual SWP contractor participation and non-participation (opt-in/opt-out), local project guidelines, Delta constraints, and area-of-origin needs. The end product of the SWP planning strategy is expected to be a detailed plan comprised of water demand reduction and supply enhancement programs and their implementation schedules. 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. This program will continue to be closely coordinated with the SWP contractors and will be modified, as necessary, to meet their changing needs.

Service Area Impact Study

In 1985, the Division of Planning completed an analysis of the socioeconomic and environmental effects of delivering additional water supplies to the SWP service areas. This study, the Service Area Impact Study, provided a consistent method of measuring the impacts of future water deliveries in the SWP service areas as required by the California Environmental Quality Act. The information developed in the study was used in several environmental impact reports prepared by the Department.

The socioeconomic and environmental data inventories used in the initial service area study are outdated. Consequently, the SWP Planning Branch began a Service Area Impact Study in late spring 1994 to update and reevaluate the effects of developing and distributing additional SWP supplies within the service areas.

Study Update

A draft status report, *Procedures for Estimating the Environmental Impacts of Increasing Water Deliveries to the State Water Project Service Areas*, was prepared in May 1995 to identify the methodology to be used for the *Service Area Impact Study, Phase One Report: Environmental Resources Baselines and Relationship Between Water Supply and Growth*. The status report, which summarized pertinent data collected to date, was distributed to the SWP contractors for their review and comment in June 1995. The Phase One investigation began in mid-1995. This investigation examined the relationship between water supply and growth and compiled environmental baseline information in the SWP service areas.

Coastal Branch Delivery Facilities

The Coastal Branch of the California Aqueduct is being 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. The 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, receives water through the Phase I facilities. The second phase is under construction and will deliver 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 first water deliveries are expected in early 1997.

Phase II Facilities

In October 1986, SBCFCWCD and SLOCFCWCD requested that the Department conduct the planning and environmental studies needed to complete Coastal Branch Phase II. The final EIR was released in May 1991; the Notice of Determination and summary of findings were issued in July 1992.

SBCFCWCD and SLOCFCWCD were notified, as required in paragraph 45(d) of the water supply contracts, that the Department would start final design on Phase II in June 1992. The two districts notified the Department of their requests for entitlement water.

Phase II Construction

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

Construction of Phase II of the Coastal Branch requires 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 being constructed include Devil's Den, Bluestone, and Polonio Pass pumping plants, and two water-storage facilities. The two tank facilities will be used to provide hydraulic stability and control in operating the project. A regional water treatment plant owned and operated by the local water purveyors (Central Coast Water Authority) is being constructed at Tank Site 1 at Polonio Pass. The Department contracted CCWA to construct Reaches 5B and 6.

Los Banos Grandes

One often-cited approach for improving the water supply reliability and operational flexibility of the SWP is through water banking south of the Sacramento-San Joaquin Delta. Water banking moves water from the Delta during periods of high flows in the winter into storage facilities located south of the Delta for later release during dry periods.

One way to improve SWP water banking capability is to increase SWP surface storage capability by constructing an additional off-stream reservoir or combination of reservoirs. Since the 1960s, the Department has conducted a number of studies to evaluate potential south-of-the-Delta off-stream reservoir sites. These studies led to the December 1990 *Los Banos Grandes Facilities Feasibility Report,* recommending construction of a 1.73 million acre-foot reservoir and associated facilities on Los Banos Creek in western Merced County.

The Department designed the LBG facilities as a primary south-of-the-Delta water bank. A major goal of the facilities would be to reduce the frequency and magnitude of projected water shortages by increasing dependability of existing water supplies available to SWP contractors. Improving reliability of SWP supplies would reduce the likelihood of long-term water shortages that could otherwise occur more frequently as demand increases.

In addition to improving the reliability of the SWP water supply, LBG would benefit Delta fisheries by providing additional flexibility to operate existing and planned delivery systems and by shifting Delta pumping to months when the effects on fisheries are least significant.

Investigations and Status

A feasibility report and draft environmental impact report for the proposed LBG project were completed in December 1990. The final EIR and statement were scheduled to be completed in 1993; construction of facilities was to begin in mid-1995. However, since the release of the 1990 reports, several events occurred to curtail the availability of exports from the Sacramento-San Joaquin Delta. The U.S. Fish and Wildlife Service and National Marine Fisheries Service mandated measures to protect delta smelt and winter-run chinook salmon. These two Delta fish species are listed under the federal Endangered Species Act. The State Water Resources Control Board and the federal Environmental Protection Agency proposed new flow and water quality standards for the Delta. These actions significantly reduce the amount of Delta flows anticipated to be available for diversion and storage in the proposed LBG facilities.

It is possible that LBG or an alternative off-aqueduct reservoir south of the Delta will be selected as a component of the CALFED Bay-Delta solution. While this decision is being evaluated, limited work continues on preserving the viability of environmental data collected at the LBG site, and evaluating mitigation techniques for potential project impacts.

These studies include:

- periodic field surveys for threatened and endangered species;
- continued investigations under the Sycamore Pilot Program, developed by the Department to evaluate survival parameters for sycamore trees in the reservoir area; and

Endangered Species Act

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:

- listing endangered and threatened species;
- 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 taking of endangered species.

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

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 EIS, 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 public and
- 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 mitigation measures are viable; and
- prepare and file applications for 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 does not preclude public involvement at this stage, however, so generally 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.

- evaluation and resolution of issues related to potential barriers to movements of the San Joaquin kit fox.

Kern Water Bank

The Kern Water Bank is a conjunctive use, groundwater banking program proposed by the Department in cooperation with Kern County Water Agency and local water districts. KWB is broadly defined as all opportunities to store and extract SWP water in the Kern County groundwater basin. The goal of KWB is to augment the dependable water supply of the SWP by storing water available from the Delta during wet periods in the Kern County groundwater basin for use during dry periods.

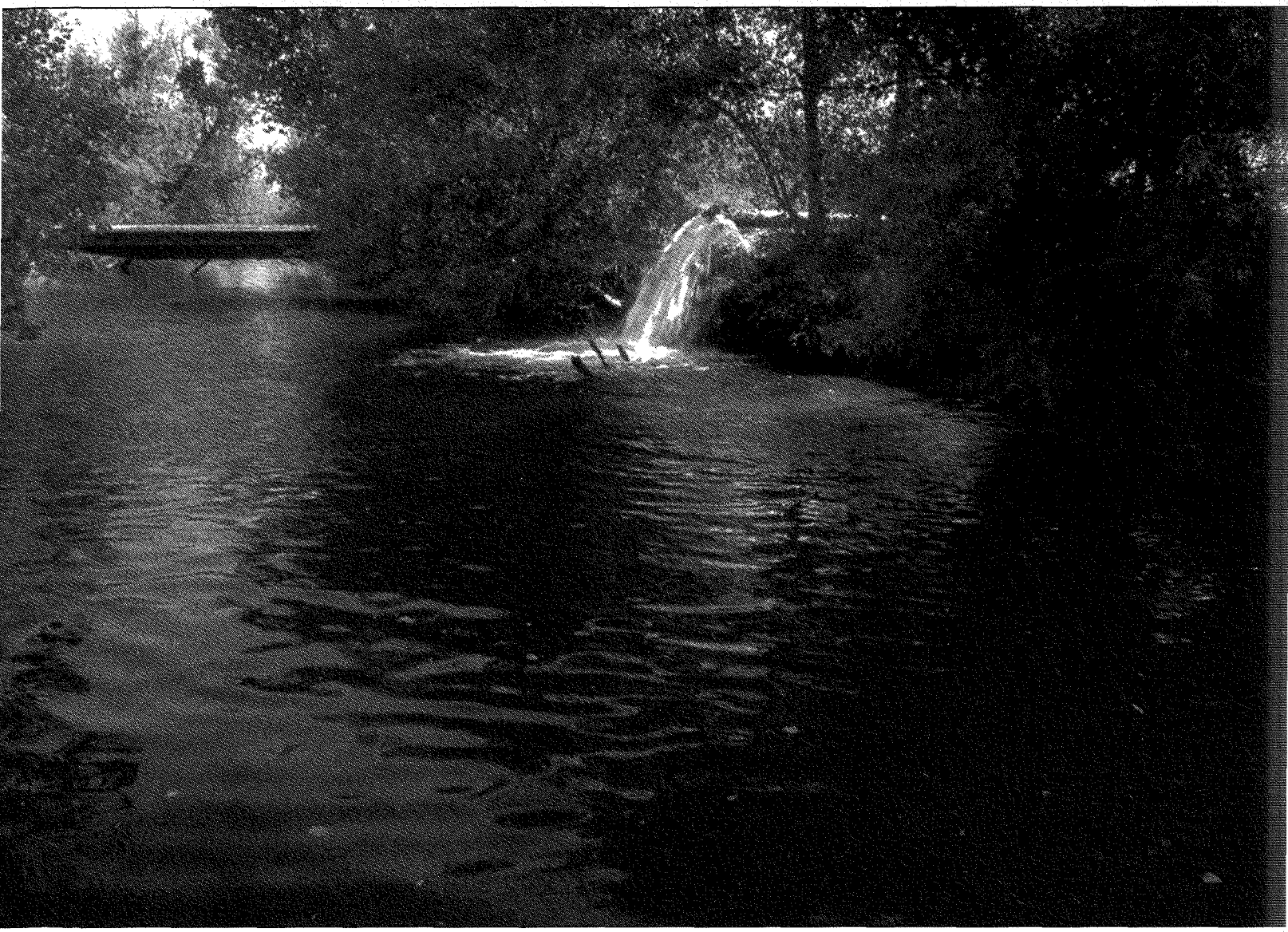
The proposed KWB consisted of eight separate projects or elements. In 1988, the Department purchased 20,000 acres of property overlying the Kern River alluvial fan for a direct recharge project known as the Kern Fan Element. Seven other "local elements" involving direct and in-lieu recharge programs were proposed by local water districts in Kern County to expand their conjunctive use capabilities. These were studied under the KWB planning efforts. Together, the eight elements could store as much as 3,000,000 acre-feet and, under 1988 regulations controlling Delta exports, provide about 400,000 acre-feet of additional water in dry and critically-dry years.

The Department's efforts to implement the KFE effectively ended in December 1994 with the signing of the Monterey Agreement. The Agreement set the principles for transferring the KFE property from the Department to designated agricultural contractors (primarily KCWA).

Between December 1994 and June 30, 1996, the Department's efforts included documentation of the groundwater modeling program and the KFE reevaluation, continuation of essential land management activities, and preparation of a wrap-up report for the KWB program activities. The groundwater model reports are complete. The reevaluation report and wrap-up report were completed in December 1996, aside from minor editing. The KWB program will not be funded after fiscal year 1995/96. Future consideration of the local elements will be included in a program that encompasses all opportunities for conjunctive use in the San Joaquin Valley.

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

Chapter 3
Water Supply Development



Pumped groundwater emptying into stream to add to water supply

Significant Events

- The Department improved the reliability of SWP water supply during dry years by initiating the 1994 and 1995 Drought Water Bank Programs, the Supplemental Water Purchase Program, and temporary water transfers.
- Conjunctive use studies were conducted in a long-term effort to further improve SWP water supply reliability.

To meet State Water Project contractors' increasing need for water, the Department of Water Resources 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 banks or transfers between SWP long-term contractors and/or other agencies, including the Central Valley Project contractors;
- establishing conjunctive use programs; and
- using SWP funds to develop local water supplies.

Water Transfers

Before 1991 most water transfers in California were conducted on a limited basis. SWP facilities were used to transfer water to SWP long-term contractors and to other agencies in California—most notably to CVP contractors.

However, in February 1991, after 4 drought years and 3 winter months of meager precipitation, California began its first large-scale water transfer program when the Governor established the 1991 Drought Water Bank. As the drought continued into 1992, he established the 1992 Drought Water Bank in March based on the successful 1991 program. Both water banks were administered by the Department and, when necessary, SWP facilities were used to transfer the water.

In 1993, with a plentiful water supply, no water bank was established. To facilitate future drought water banks, however, the Department issued a final programmatic environmental impact report in November 1993. The EIR outlines the framework for future water bank operations under specified drought conditions.

Based on its experience in managing the 1991 and 1992 water banks, the Department also published *Water Transfers in California: Translating Concept into Reality.* Released in November 1993, this report presents an overview of issues involved in water transfers and provides guidance for individuals and agencies interested in implementing a water transfer. Recognizing that water transfers will undoubtedly play a major role in California's future, the publication discusses lessons learned and challenges that remain for water managers and others concerned with water transfers.

The following sections briefly describe water transfer activities. Specific information is noted in Chapter 10.

Drought Water Banks

The 1991 and 1992 Drought Water banks were successful in arranging water transfers to meet critical agricultural, urban, and fish and wildlife needs on a short-term basis.

Following a wet 1993, when a water bank was not activated, a dry 1993-1994 winter along with severe water export restrictions in the Delta resulted in major cutbacks in 1994 water deliveries to SWP and CVP contractors. In June 1994, Director Kennedy announced the activation of a 1994 Drought Water Bank. Water bank activities were immediately initiated that resulted in the acquisition and transfer of enough water to meet all 1994 critical needs.

Four SWP long-term water contractors and eight non-SWP contractors benefited from this program. A total of 115,083 acre-feet of water, mainly for agricultural use, was conveyed in 1994 with 103,908 acre-feet conveyed through SWP facilities. Deliveries to SWP contractors totaled 27,468 acre-feet.

1995 Drought Water Bank

In anticipation of a dry 1995, the Department organized the 1995 Drought Water Bank Program in late 1994. The program purchased water supply options on 29,050 acre-feet of water from willing sellers while the bank was in an inactive status. If the bank had been activated, the Department would have exercised these options to meet critical needs of participating SWP and non-SWP contractors. Although the pro-

gram was not activated due to abundant precipitation and snowpack throughout the State, the option purchases did improve water supply reliability for participating agencies.

Increasing interest is being expressed in water transfers as a water management tool for alleviating short-term shortages as well as for augmenting long-term supplies. During 1994, and in conjunction with the 1994 Drought Water Bank, the Department executed agreements with six SWP contractors for the acquisition and delivery of water under a short-term water purchase program. A total of 58,400 acre-feet was delivered to SWP contractors in 1994 under the program. The Department continues to explore possibilities of purchasing water via short-term transfers.

Supplemental Water Purchase Program

During 1994, the Department began drafting a programmatic environmental impact report for the Supplemental Water Purchase Program. This EIR describes a 6-year program outside the scope of a Drought Water Bank Program intended to acquire up to 400,000 acre-feet annually from willing sellers for use by participating SWP contractors. Water for the program could be secured either through direct purchases or by the purchase of water supply options. Efforts to develop this program continue.

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 are usually in two forms: (1) water loans or entitlement water transfers between long-term SWP contractors; or (2) transfers of nonproject water to non-SWP and SWP agencies. Most temporary water transfers must be approved by the State Water Resources Control Board in accordance with Sections 1725 through 1728 of the *California Water Code.*

Conjunctive Water Use

Conjunctive use of surface water and groundwater provides important benefits in water management. Conjunctive use increases the flexibility of overall water management, improves efficiency, and assists in development of creative solutions to potential problems.

Cooperative agencies work together for mutual benefit by making the most efficient use of available water supplies. By combining resources, these agencies develop projects and solve problems beyond their individual capabilities.

Conjunctive use is a relatively low-cost method to store water in times of above-average supply for dry period use. Conjunctive use stretches the water supply locally and statewide. For example, agencies with subsurface storage space can capture flood flows when surface storage is limited.

Since the 1960s, the Department has promoted conjunctive use as a water management tool and has operated its own groundwater demonstration programs. In 1992, the Department expanded its conjunctive use program to investigate potential for planned conjunctive use in the Sacramento Valley to contribute to both local and State Water Project supplies.

The Sacramento Valley

The Department adopted a three-part approach to evaluate the conjunctive use potential of the Sacramento Valley. Work completed this year focused on the latter two components. This approach consists of:

- evaluating hydrogeologic conditions, water supply, facilities, legal and institutional relationships, and existing operations;
- working with local agencies to establish cooperative relationships needed to resolve legal and institutional concerns and develop cooperative problem-solving approaches; and
- conducting investigations and developing demonstration programs to allow incremental expansion as conditions permit.

The Department is conducting several investigations to determine the potential for conjunctive water use in the Sacramento Valley and is also working to develop demonstration programs as conditions permit. These projects would develop water to augment the SWP water supply in dry years.

Yolo County. The Department completed a cooperative prefeasibility investigation of a conjunctive use project designed to provide 30,000 acre-feet of dry-year supply, but was unable to reach agreement with local cooperators to develop a demonstration project. However, the Department continued to monitor water levels and subsidence in the area while designing facilities for a separate project to be developed in the Los Rios Farms area.

American River Basin. The Department completed the prefeasibility investigation in the American River Basin area of Sutter, Placer, and Sacramento counties. This investigation contemplates the development of up to 55,000 acre-feet of dry-year water supply for the SWP by managing groundwater and surface water. During dry periods, groundwater would be substituted for a portion of the surface water normally used in the area with the surface water available for SWP use. During wet periods, groundwater would be recharged by in lieu means using additional surface water imported to the area. The feasibility study is scheduled to be completed in June 1997. Study participants include South Sutter Water District, Natomas Central and Pleasant Grove-Verona Mutual Water Companies, Placer County Water Agency, and Reclamation District No. 1001.

M&T Chico Ranch. Work continued on the Phase II investigation at the M&T Chico Ranch in Butte County. Efforts focused on evaluating the hydrogeology of the ranch, developing a water level monitoring network, reviewing water rights, identifying recharge options, and developing project designs. This study will be completed in 1996.

Butte Basin. The 1987-92 drought resulted in substantial increases in groundwater use in the Butte Basin. Monitoring the basin response identified a significant resiliency that makes the basin attractive for conjunctive operation. However, it also raises unresolved issues involving the amount of "new" water that can be developed. The Department, in cooperation with local districts, formulated an approach to evaluate the conjunctive use potential of part of the basin and provide data needed to improve understanding. However, these studies were delayed by resumption of drought water bank activities in 1994 and the ongoing controversy over the effects of these activities.

Colusa Basin. The Department reached agreement with Reclamation District No. 108, Colusa County Water District, and the Yolo-Zamora Water District for a cooperative prefeasibility investigation of the conjunctive use potential of the lower Colusa Basin. The proposed project would involve in lieu recharge in wet years and groundwater substitution in dry years and would also help alleviate land subsidence. The investigation is scheduled to be completed in June 1997.

Local Agency Concerns. The Department continues to work with local agencies and other interested parties to address their concerns about additional use of groundwater, water transfers and to inform them about the potential for conjunctive use as an element of overall resource development and management. Local agencies continue to develop groundwater management programs and are trying to assert increased local control over water supply development and use. However, the difficulty of resolving conflicting local interests has slowed adoption of programs. The implications of these local concerns on conjunctive use projects remain uncertain.

Stanislaus River Basin and Calaveras River Water Use Program

In 1986, two water districts in San Joaquin County, Stockton East Water District and Central San Joaquin Water Conservation District, presented a proposal to the Department and USBR for releasing CVP water from New Melones Dam in exchange for financing diversion and conveyance facilities. Specifically, the districts proposed to release 155,000 acre-feet of CVP-contracted water (106,000 acre-feet of interim water and 49,000 acre-feet of firm water) into the Stanislaus River in dry years to possibly increase SWP and CVP yield. In exchange, the SWP and CVP would finance surface water facilities in the Stanislaus River basin to allow the districts to divert and store their CVP contract water during wet years. During dry years the districts would revert to groundwater use.

In 1988, in response to the proposal, the Department, USBR, and local water agencies agreed to investigate the future demands for water in the study area and the most efficient means of meeting those demands. The Department and USBR prepared a work plan for

that investigation and a Memorandum of Understanding was signed by the Department, USBR, Department of Fish and Game, Stockton East Water District, Central San Joaquin Water Conservation District, Calaveras County, Calaveras County Water District, Tuolumne County, Tuolumne Regional Water District, Stanislaus County, San Joaquin County, Lathrop County Water District, South Delta Water Agency, and the cities of Escalon, Ripon, Manteca, and Stockton.

Two irrigation districts, Oakdale Irrigation District and South San Joaquin Irrigation District, with water rights to Stanislaus River water, decided not to sign the MOU, but instead to monitor and contribute information to the study when necessary.

Alternatives to Meet Demand. As part of the study process, the Department and USBR developed and analyzed alternatives to determine the one that best:

- preserves and protects water resources for long-term use in areas of origin;
- meets current and projected local agricultural and municipal and industrial water needs in the study area;
- provides increased instream flows for fishery and wildlife in the Stanislaus and San Joaquin rivers;
- improves water quality in the Stanislaus River, San Joaquin River, and southern Delta channels; and
- increases yield of the CVP and SWP and assists in meeting Delta outflow requirements.

In 1991, Stockton East Water District and Central San Joaquin Water Conservation District decided to begin constructing a portion of the diversion and conveyance facilities necessary to import CVP water to their service areas before a conjunctive use agreement was implemented. A 3.5-mile diversion tunnel and 8.5 miles of canal were financed and constructed by the two districts to divert 155,000 acre-feet of interim and firm water supplies from the Stanislaus River, via Shirley Creek, into Farmington Reservoir, a U.S. Army Corps of Engineers flood control reservoir.

The tunnel and canal conveyance facilities were completed in summer 1993. However, provisions of the Central Valley Project Improvement Act, passed in 1992, requires 800,000 acre-feet of CVP yield to be dedicated to environmental needs. In 1993, this CVPIA requirement resulted in a lack of water supply for SEWD and CSJWCD to divert. Although a court order now prevents implementation of CVPIA flow requirements for the Stanislaus River until CVPIA environmental documentation is complete, the availability of water for diversion by SEWD and CSJWCD remains uncertain.

Current Status. In March 1995, the Department withdrew participation in the Stanislaus River Basin and Calaveras River Water Use Program based on the impact of new proposed Delta Standards on the water supply potential of the program. In May 1995, these new Delta standards were issued by the State Water Resources Control Board and submitted to EPA for approval under the Clean Water Act. These standards have a potential to increase the demands on New Melones Reservoir to meet water quality and pulse flow requirements. USBR traditionally relies on New Melones to meet Delta and San Joaquin River requirements below the confluence with the Stanislaus River. Due to these increasing demands on the Stanislaus River, it appears unlikely that sufficient interim CVP water supplies will be available to support the SEWD and CSJWCD conjunctive use proposal.

Three environmental studies for the draft EIR/EIS were in progress when the Department withdrew from the program: a Habitat Evaluation Procedure study along the Stanislaus River; a survey of threatened and endangered animal species; and a survey for sensitive vegetation species. Summaries of the completed portions of the environmental studies, as well as descriptions of other work completed by the Department on this program, are included in a Stanislaus River Basin and Calaveras River Water Use Program wrap-up report, published in December 1995.

Local Water Supply Projects

Local projects to augment water supply may be financed with SWP funds and become units of the SWP if the Department determines that the projects are structurally, economically, financially, and contractually feasible as well as environmentally acceptable. SWP water 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 the 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 non-participating SWP contractors.

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

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

Central Valley Project Improvement Act of 1992

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

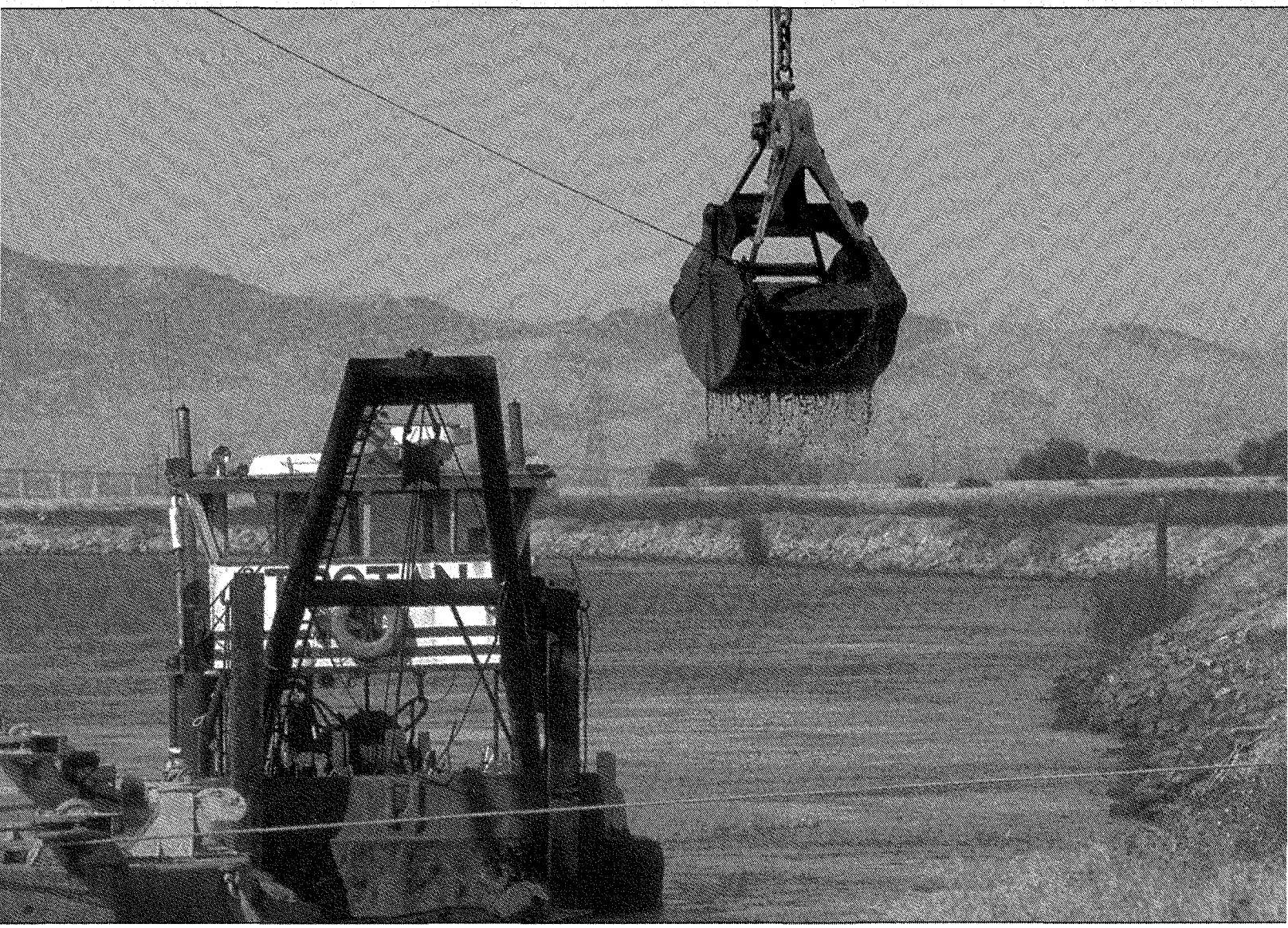
The CVPIA is designed to (1) protect, restore, and enhance fish, wildlife, and associated habitats in the Central Valley and Trinity River basins; (2) address impacts of CVP on fish, wildlife, and associated habitats; (3) improve operational flexibility of the CVP; (4) encourage expanded use of voluntary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

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

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

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

Chapter 4
Delta Resources



Dredged material from Clifton Court Forebay improves Twitchell Island levees

Significant Events

- Permits for a 5-year extension of the South Delta Temporary Barriers Project were received in 1996. The Grant Line Canal barrier was installed for the first time since the project's inception.
- A Draft Environmental Impact Report/Environmental Impact Statement for the proposed Interim South Delta Program was released in July 1996.

Federal and State agencies, including the Department of Water Resources, developed and implemented several programs over the past 40 years that were designed to preserve the Delta both as a unique environmental resource and as one of California's major water supply sources.

The goals were to:

- improve water supply reliability to the SWP and other Delta water users;
- determine the levels of salinity necessary to protect fish and wildlife habitat; and
- devise methods to control flooding, protect fish and wildlife, and provide for recreational activities.

Delta Water Management Programs

The Department developed planning programs to manage water in three distinct areas of the Sacramento-San Joaquin Delta: the south Delta, north Delta, and west Delta (Figure 4-1). Under the guidelines contained in the Governor's 1992 water policy, the Department's Delta planning programs are designed to emphasize solutions that can be implemented relatively quickly to improve conditions in the Delta. As part of the policy to "fix the Delta," the Governor directed that actions in the south Delta be implemented for the short term and long-term solutions be investigated and evaluated by the Bay-Delta Oversight Council. The 1994 Framework Agreement between the federal and State government set up a new Bay-Delta Advisory Council. The council was chartered under the Federal Advisory Committee Act. It provides input to CALFED, which is made up of State and federal resource managers for the Bay-Delta. BDAC consists of 31 citizen-advisors selected from California's agricultural, environmental, urban, business, fishing, and other interests with a stake in finding long-term solutions to Bay-Delta problems.

In addition, the December 15, 1994, *Principles for Agreement on Bay-Delta Standards Between the State and Federal Governments* implemented flow and water quality standards for the estuary for the next 3 years that would coordinate federal and State water operations.

Interim South Delta Program

To comply with the Governor's water policy, the Interim South Delta Program requires accelerated construction of south Delta facilities that can improve Delta water conditions while a long-term solution is developed and implemented.

The Interim South Delta Program is designed to improve hydraulic conditions and water levels and circulation in south Delta channels for local agricultural diversions. Improved hydraulic conditions will increase operational flexibility to divert water into Clifton Court Forebay and improve reliability of scheduled diversions at Banks Pumping Plant.

Preferred Alternative. The environmental review process currently in progress includes a preferred alternative consisting of action to be taken by the Department and the U.S. Bureau of Reclamation to:

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

The proposal for increasing diversions into Clifton Court Forebay would allow Banks Pumping Plant to pump up to its maximum design capacity of about 10,300 cubic feet per second with fewer restrictions. It would also improve the reliability of SWP water supply and increase operational flexibility. In addition, the proposal to construct flow-control structures

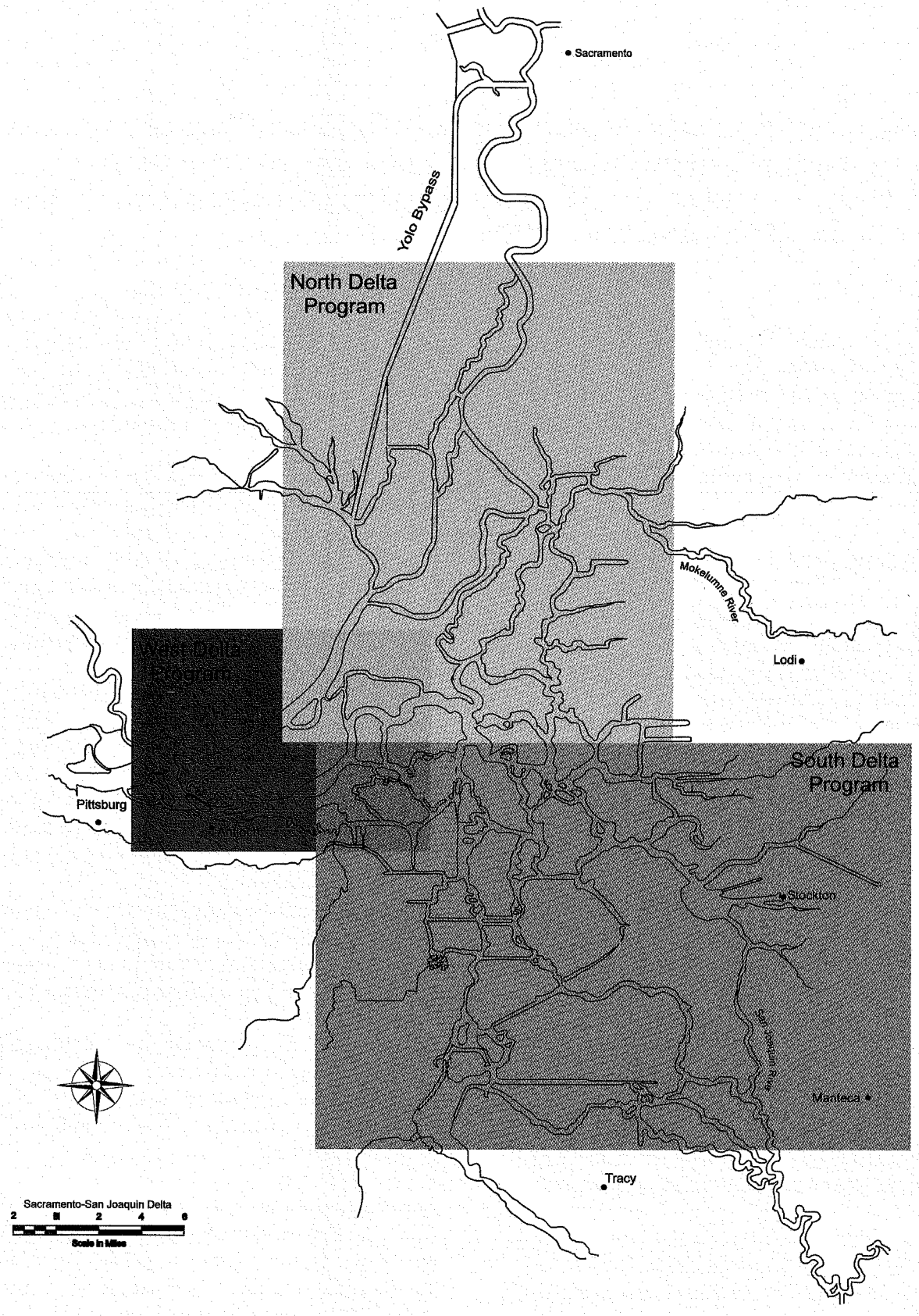


Figure 4-1
Boundaries of North, West, and South Delta Water Management Programs

in south Delta channels would allow the Department and USBR to meet the obligations of a pending contract with South Delta Water Agency to improve conditions for local agricultural diversions. The fish-control structure would benefit salmon migrations in the San Joaquin River.

To minimize losses of wildlife habitat related to the Interim South Delta Program, the preferred alternative no longer specifies an enlarged Clifton Court Forebay. Also, the Department and USBR signed an agreement with the Department of Fish and Game to develop fishery mitigation in the environmental review process.

Environmental Review Process. A draft EIR/EIS for the ISDP is scheduled for release in July 1996; the final EIR/EIS is scheduled for release in early 1998. 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 key permits required 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, and the Environmental Protection Agency.

Interim North Delta Program

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

The objectives of the Interim North Delta Program were to:

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

The program was also designed to enhance wildlife habitat and recreational opportunities. Actions under consideration included:

- increasing the hydraulic capacity of the Mokelumne River channels by dredging;
- improving levees by creating waterside berms and adding material to landside slopes;
- creating levee setbacks;
- enlarging the Delta Cross Channel gate structure;
- providing a new screened diversion from the Sacramento River near Hood into the Mokelumne River system; and
- testing and implementing various fish protective measures such as screens and fish guidance systems.

West Delta Program

The objectives of the West Delta Program will improve the integrity of local levees, implement land-use management to control subsidence and soil erosion on Sherman and Twitchell islands, and provide diverse habitat for wildlife and waterfowl.

Other benefits that result from this program include:

- increased flood control, including protection for highways and utilities;
- additional protection of water quality in the Delta;
- increased reliability of the SWP water supply;
- additional opportunities for recreation in the Delta;
- reduced fish losses;
- improved water quality;
- increased wetlands and wildlife habitats; and

- increased terrestrial biodiversity.

The Department also 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 through the Department could be available as mitigation for impacts associated with current and future Delta water management programs.

These potential wetland and wildlife habitats on the two islands comply with federal and State policies to enhance and expand wetlands.

The Department is a major landowner on both Twitchell and Sherman islands with two trustees on both Reclamation District 1601 (Twitchell Island) and Reclamation District 341 (Sherman Island). This permits 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 has the ability to assess the land for the 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 diverse 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 also critical to protecting Delta water quality and serve a significant function in the State's water transfer system. The State Legislature recognized the importance of the Delta following the floods of the early 1980s and enacted the Delta Flood Protection Act of 1988 (SB 34). 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."

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 of the United States, including wetlands as well as all interstate waters and 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.

After applications and workplans are reviewed, the Department requests their approval by the Board. The Board is also requested to approve each District's maximum possible reimbursement (up to 75% for levee work; up to 100% for habitat mitigation) and maximum advanced reimbursement amount based on the program's reimbursement prioritizing scheme and available funding.

Upon Board approval, agreements are executed between the Board 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 and the towns of Thornton and Walnut Grove. A plan of action for flood control for the towns of Thornton and Walnut Grove was approved by the Legislature in July 1989.

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 western Delta 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,* published by the Department in December 1982.

Some of the projects that have been completed or are in progress through the Special 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;
- Hotchkiss Tract Phase I HMP (1996)—2,700 feet of levee improvement to the Hazard Mitigation Plan (HMP) standard;
- Twitchell Island levee setback (1995)—3,000 feet of levee setback;
- Sherman Island cross levee repair (1995)—upgrade to HMP standard;
- Sherman Island long-term levee improvements (1996)—construction of stability berms along portions of levee adjacent to Mayberry Slough and the 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 have subsided up to 25 feet since the Delta islands were drained in the late 1800s, primarily due to oxidation of the soil organic matter. The Legislature recognized that problem and, with the Delta Flood Protection Act, requested the Department to monitor subsidence and study its causes.

Accordingly, the Department and the U.S. Geological Survey are conducting an ongoing subsidence investigation in the Delta. After reviewing preliminary data provided by USGS, the Department concluded 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.

Subsequent research will focus on maximizing soil accretion by growing organic material (tules). A 25-acre test area has been constructed on Twitchell Island and it will be managed to maximize soil accretion.

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 first project on Sherman Island (Reclamation District 341) used about 1,600 cubic yards of sediment dredged from Suisun Bay as part of a 2,500-cubic-yard experimental toe berm. The berm was built on the toe of a levee reach along the San Joaquin River. As a condition of allowing the import of dredged sediment from the San Francisco Bay area to Sherman Island for levee rehabilitation, the CVR-

WQCB required an extensive program of soil and water monitoring. No soil or water quality problems were found.

The second project on Twitchell Island (Reclamation District 1601) transported about 50,000 cubic yards of sediment to the island. The sediment was dredged from Suisun Bay, transported from the Corps' storage site on Simmons Island, and used as part of a major rehabilitation of the San Joaquin River levee on Twitchell Island. The dredged sediment was used with the permission of the CVRWQCB, which required—as a condition for its approval—that a water quality monitoring program be undertaken on Twitchell Island. No adverse salinity impacts have been measured.

A third project, the Jersey Island Demonstration Project, consisted of levee-stabilizing berms using about 65,000 cubic yards of sediment dredged from navigation channels in Suisun Bay and New York Slough. The project entailed extensive cooperation and planning among the Department, the Corps, Reclamation District 830 on Jersey Island, and DFG. In addition, the CVRWQCB required a very extensive and expensive monitoring and testing program as part of the waste discharge permit issued for the project. The monitoring and reporting required by the CVRWQCB have not identified any adverse impacts.

At present, the Special Projects Program is being coordinated with the CVRWQCB and the Long-Term Management Strategy to develop dredge material rehandling facilities on Sherman Island. The intent of these sites is to have monitoring programs established so that all LTMS dredging adjacent to these sites will be stockpiled for later use in levee improvement projects.

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

In August 1991, the Corps, the State Reclamation Board, 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 identifies existing and future land uses in years 2000, 2020, and 2040. The report also included a discussion on developing a comprehensive plan, primarily for flood control, navigation, and environmental restoration.

Phase II of the special study is in progress. In Phase II, a Regional Planning Report for environmental restoration, flood control, and navigation is to be developed. The purpose of this report is to develop a region-wide plan for Corps involvement in the Delta that links with other planning efforts. The Regional Planning Report will incorporate and be closely coordinated with the long-term policies and plans of CALFED. Other Phase II efforts include: design and construct a levee test section; borrow material source studies; and dredge material reuse studies.

In addition, a planned joint program will investigate other reuse opportunities as well as 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.

South Delta Water Agency v. United States, et al.

In 1982, the South Delta Water Agency filed suit in Federal District Court for the Eastern District of California against the United States, the Department of the Interior, the U.S. Bureau of Reclamation, and the Department. This case involves the effects of operations by the Central Valley Project (operated by the USBR) and the State Water Project on the SDWA service area, and the effect of the Department of Interior's designation of the boundaries of the New Melones Reservoir service area as not including the SDWA service area. In its suit, SDWA asked for declaratory and injunctive relief, which, if granted, would have restricted certain Delta operations.

The United States and the SDWA settled the agency's motion for preliminary injunction to prevent the United States from signing contracts for New Melones water. The motion was settled by parties agreeing to a stipulation that any contracts entered into by the United States are subject to any superior rights in the southern Delta that are determined in this litigation. In October 1986, the USBR, the Department, and the SDWA signed a framework agreement to settle the lawsuit. The parties agreed to work together to develop mutually acceptable, long-term solutions and to stay all actions in the litigation while negotiating a settlement.

In August 1990, a draft contract for settlement of the lawsuit was completed. The proposed settlement contract includes provisions for constructing, operating, and maintaining temporary (and later permanent) rock barriers in south Delta channels to improve water levels and circulation. In addition, according to the contract, USBR will take interim actions to improve the quality and quantity of water that flows into the south Delta from the San Joaquin River. The SDWA held an election in September 1991 at which the voters approved the signing of the contract. USBR is in the process of obtaining authorization to sign the contract. The Department has proceeded with designing, constructing, and operating the temporary barrier facilities as part of the five-year testing program included in the proposed contract. USBR and the Department will share equally the costs associated with the barrier facilities. According to the contract, those costs are limited to $40 million for both the temporary and permanent barriers.

Delta Water Rights Management

Several agencies in the western Delta claim rights to usable 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, South Delta Water Agency, Central Delta Water Agency, East Contra Costa Irrigation District, Contra Costa County Water Agency, and Byron-Bethany Irrigation District. Two of those agencies—North Delta Water Agency and East Contra Costa Irrigation District—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 contract with the SDWA and USBR. The Department and SDWA signed the agreement. USBR is still working to obtain approvals from federal agencies to sign the contract, which will include provisions to address SDWA's concerns about the quality of water entering SDWA through the San Joaquin River system.

According to provisions of 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 Central Valley Project on water levels, quality, and circulation in the south Delta.

Currently, the Department has conducted public meetings, negotiations, and environmental and engineering studies to test barriers in south Delta channels. The studies involve:

- reducing or eliminating adverse water levels;
- improving hydraulic circulation;
- reviewing alternative timing patterns for the barriers;
- monitoring fish and vegetation;
- evaluating and reviewing computer model calibration;
- developing comprehensive environmental information; and
- defining potential effects on vegetation and fisheries.

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 Old River at head barrier redirects San Joaquin River water that would otherwise flow into Old River down the San Joaquin River toward the central Delta. This additional flow in the San Joaquin River guides fish to the ocean in the spring and improves dissolved oxygen levels for upstream salmon spawning in the fall. The other barriers have culverts with flap gates and a notch in the barriers that increase upstream flows and improve water levels and circulation.

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; and the Middle River barrier has been installed since 1987. The Grant Line Canal barrier was installed in July 1996.

In addition to providing for barrier facilities, the proposed contract defines amounts of certain interim releases from New Melones Reservoir and other related actions to be taken by USBR. Those measures will provide a temporary solution to the portion of the 1982 litigation concerning San Joaquin River flows and water quality measured at Vernalis.

A more permanent settlement of issues concerning the quantity and quality of water entering SDWA boundaries from the south through the San Joaquin River system will take the form of an amendment to the proposed contract. The proposed contract includes the framework for USBR and SDWA to use in negotiating an amendment.

The South Delta Water Agency held an election in September 1991 and voted overwhelmingly (97 percent) to approve the contract. However, Congressional authorization is needed for USBR to sign the contract. USBR is seeking authorization under the Central Valley Project Improvement Act.

Western Delta Industrial Water Users

Some industries near the cities of Antioch and Pittsburg in the western Delta use offshore water in their manufacturing process. When offshore water quality falls below the industries' requirements, a substitute supply is provided through the Contra Costa Canal.

According to terms of a contract executed in 1987, the Department makes payments to the operator of a mill located in the western Delta, Fibreboard Corporation and its successors (now Gaylord Container Corporation), when water suitable for the mill's use is not available for a calculated number of days during the water year. If water is deemed suitable for fewer than the number of days to which Gaylord is entitled, the Department compensates Gaylord for added costs of purchasing a substitute water supply and treating water needed to operate the mill. According to the Department's initial interpretation of the contract provisions, the Department has made payments to Gaylord totaling $2,621,339.58.

On November 19, 1991, the Department negotiated an agreement with Gaylord Corporation regarding another mill Gaylord owns downstream of the mill purchased from Fibreboard. The provisions of that agreement are similar to those contained in the 1987 water entitlement agreement and payments to date were $386,776.30.

Determination of Payments. The contracts contain a chart based on the relationship between the Sacramento River Index and the number of days the corporation is entitled to water of suitable quality. Days for

payment is the difference between the entitlement days and actual days of suitable quality. The payment formula is the same in both contracts except for one factor relating to the method of obtaining water from the San Joaquin River. The second mill incurs no measurable pumping costs when taking process water from the river.

There was an unresolved disagreement regarding interpretation of the contract and Gaylord filed a suit in the Sacramento Superior Court. (See Chapter 8.) In January 1996, a settlement was reached. The parties agreed to dismiss the lawsuit and resolve all outstanding issues by cancelling the contract. This contract covered the Department's payment of $3,000,000 to satisfy and discharge the Department's obligations to Gaylord for water quality and water supply. If the Fiberboard plant reopens and is in full operation by January 18, 2003, the additional amount of $2,500,000 would be payable to Gaylord.

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 offshore in the Antioch-Pittsburg area, the Department signed contracts with those agencies in 1967 (Contra Costa Water District) 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 offshore water supplies of usable quality lost because of SWP operations. Credits for the number of days of above-average offshore water supplies of usable quality accrue to offset the number of below-average days in future years.

Federal Agencies

U.S. Army Corps of Engineers

In addition to its historical leadership role in Delta flood control, the Corps 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 Central Valley Project 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 the Coordinated Operation Agreement, signed in 1986. That agreement replaced a system of year-to-year agreements regarding the responsibilities of the Department and USBR in the Delta.

In the agreement, USBR agreed to share responsibility for sustaining flows in the Delta during dry periods. The agreement is significant in that the federal government agreed to accept most of the State Water Resources Control Board's water quality requirements for the Delta with certain restrictions as to limitations of State and federal authorities.

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

Chapter 5
Environmental Programs

Snow geese take flight from pond at Gray Lodge Waterfowl Management Area

Significant Events

- Department staff continued work on an environmental impact report for a planned 5-year supplemental water purchase program.
- The December 15, 1994, Delta Accord and the State Water Resources Control Board's Water Quality Control Plan made significant changes to the alternatives required to reach a no-jeopardy opinion for delta smelt and winter-run chinook salmon. Changes to the 1995 revised biological opinion include export/inflow ratios replacing QWEST, closure of the cross channel gate during fall/early winter, and revised San Joaquin pulse flows.
- The winter-run chinook salmon incidental take statement includes the concept of a warning (yellow light) at the 1 percent level, in addition to a reconsultation (red light) at the 2 percent level of expected juvenile winter-run chinook salmon.
- Although the U.S. Fish and Wildlife Service made the splittail a candidate species, no listings were made in 1995 because of a budget-related moratorium on new listings.

The Department of Water Resources has developed several programs and taken measures to eliminate, minimize, or offset adverse impacts that might result from construction and operation of State Water Project facilities. These programs and measures are undertaken in addition to the environmental documentation and mitigation activities required to obtain approvals for any additional project facilities.

Water Transfers

Department staff began preparing a draft EIR for a SWP Supplemental Water Purchase Program in late 1994. The program, expected to last 5 years, will allow SWP contractors to purchase water to meet deficiencies in their Table A entitlements in any given year. The Department expects that up to 400,000 acre-feet could be purchased and transferred to SWP contractors from a combination of groundwater exchange and stored water. The EIR will address potential impacts to upstream uses and to the Delta, as well as service area impacts resulting from the water transfers. An administrative draft EIR has been circulated, with public distribution of the draft expected in fiscal year 1996-97.

Real-Time Monitoring

Real-time monitoring refers to the collection of fish abundance and distribution data obtained in the field, which is then provided to some members of the CALFED Operations Group within 24 to 48 hours. In 1995, real-time monitoring predicted patterns for catches of targeted species at designated Delta locations and corresponding patterns of fish salvage at SWP and CVP Delta facilities. This information was the basis of the 1995-96 real-time monitoring program.

During May and June 1995, real-time monitoring specifically targeted chinook salmon, delta smelt, and splittail. Monitoring helped the operations group and the Interagency Ecological Program to assess the feasibility of collecting and processing information for use by SWP and CVP operators and State and federal fish and wildlife agencies. That information allowed the operators to better protect targeted fish species from entrainment while also increasing water supply reliability.

1995 Fish Tracking Programs

The real-time monitoring program consisted of two phases. The first phase ran from May 1 to May 21 and targeted juvenile salmon and 20+ mm delta smelt. However, when monitoring during this first phase indicated that splittail were abundant throughout the Delta and that the majority of delta smelt were west of Chipps Island, sampling shifted toward splittail. This second phase ran from May 22 to June 30.

Splittail. The 1995 real-time monitoring program tracked the movement of young-of-the-year splittail leaving the Sacramento and San Joaquin rivers and moving through the Delta. In 1995, one of the wettest water years since 1983, splittail produced perhaps the largest year class to be documented in the Delta since the mid-1960s. Although fisheries biologists expected a good year class based on prolonged high river flows, the magnitude of the spawning success, particularly from the San Joaquin River, was unexpected. Real-time monitoring data provided the best picture yet of how a large year class of splittail disperse throughout available habitat.

Chinook Salmon Smolts. Real-time monitoring also tracked about 275,000 hatchery smolts released on May 10 from the Merced River Fish Facility. Daily average CVP and SWP pumping was reduced by approximately 1,500 cfs (to 3,900-4,500 cfs) between May 22 and 27 to facilitate movement of the smolts past the pumping plants. Although tracking peak levels of smolts immigrating into the Delta from the Merced release seems relatively straightforward, fluctuation between the peaks made it difficult for

biologists to determine how long to reduce the pumping to adequately protect the smolts. The monitoring program also helped follow the approximately 12 million salmon smolts released from the Coleman National Fish Hatchery in April.

Uses of Real-Time Monitoring

One of the objectives of the 1995 real-time monitoring program addressed the use of fish density and distribution information to modify pumping levels and reduce the impact of water exports on fisheries. Unprecedented numbers of young- of-the-year splittail collected at Mossdale on June 4 and 5 led the U.S. Fish and Wildlife Service to request a reduction in export pumping to limit splittail entrainment. To accommodate that request, the Department reduced exports for 3 days beginning June 11. In future years, data collected during real-time monitoring will be used to determine if a predictive relationship exists between catches of targeted species at designated locations and the corresponding pattern and magnitude of fisheries losses in SWP and CVP salvage operations.

Biological Opinions

In most years, the delta smelt spends its entire life cycle in the Delta and Suisun Bay and can therefore be affected by project operations. Juvenile winter-run chinook salmon passing through the estuary on their way to the ocean may be impacted by: (1) project-induced changes in Delta flow patterns, and (2) direct losses at the pumps. To determine if SWP and CVP operations jeopardize the continued existence of these two fish species, the Department joined the U.S. Bureau of Reclamation in consultations with State and federal fish and wildlife agencies.

Consultations resulted in a biological opinion for each species. The National Marine Fisheries Service issued its long-term opinion for winter-run chinook salmon in February 1993 and amended the opinion in May 1995. NMFS issued a jeopardy opinion for winter-run salmon because of Shasta reservoir operations and effects on temperatures in the Sacramento River. USFWS issued two consecutive 1-year jeopardy opinions on delta smelt in 1993 and 1994. In March 1995, NMFS issued a long-term opinion concluding that because of operational changes made after the December 1994 *Principles for Agreement*, the projects would not jeopardize the continued existence of delta smelt.

Operational Changes

The 1995 biological opinions identify operational changes related to the 1994 *Principles for Agreement*. The NMFS amendment to the winter-run opinion replaces the QWEST requirements with more direct export/inflow ratios contained in the *Principles for Agreement* and the SWRCB Water Quality Control Plan of May 1995. Those ratios allow a maximum export rate of 65 percent of inflow from November through January, although the export rate may be adjusted by the CALFED Operations Group to ensure biological protection of winter-run chinook salmon.

The delta smelt biological opinion set a threshold value for a combined incidental "take" at both facilities using a 14-day running average of no more than 400 fish. When this level is approached, the Department and USBR consult with USFWS to determine operational changes if smelt salvage increases. In 1995, salvage of smelt primarily occurred during January and February and completely ceased by mid-April.

The long-term delta smelt opinion assumes export limits, similar to those in the *Principles for Agreement* and SWRCB Water Quality Control Plan. Between April 15 and May 15, the SWP and CVP have a combined maximum 3-day running export rate of 1,500 cfs or 100 percent of the San Joaquin River flow. The time period may be adjusted to coincide with fish migration and the maximum export rate may be varied by the CALFED Operations Group. The opinion also assumes a maximum export rate of 35 percent of inflow from February through June. In addition, both opinions contain incidental take statements that describe measures to minimize the losses of winter-run chinook salmon and delta smelt that are incidental to project operations.

Pumping Restrictions. No take-related pumping curtailments occurred between January 1, 1995, and June 30, 1995, since incidental take criteria of winter-run chinook salmon and delta smelt were within the acceptable range described in the incidental take

statement. The final estimate of winter-run sized salmon take (October 1 through May 31) was 1,192 smolts, below the incidental take statement level of 1,490 smolts. The 1995 delta smelt biological opinion specifies a 14-day running average and monthly total take levels. At no time during the year did project operations take more delta smelt than expected under the incidental take statement.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service, an agency within the Department of the Interior, has the mission to "conserve, protect and enhance fish, wildlife and their habitats for the continuing benefits of the American people." Among the responsibilities of USFWS is administration of the federal Endangered Species Act to provide protection for terrestrial and aquatic plants and animals except anadromous fish. USFWS also works with federal, State, and local agencies and interests in matters regarding wetland protection.

Within California, USFWS is responsible for biological opinions and critical habitat and recovery plans for such threatened and endangered species as the delta smelt. Biological opinions issued by USFWS, particularly the delta smelt opinion, significantly affect SWP and CVP operations. Close interagency coordination is required to operate the projects in conformance with the biological opinion. The Department also works with USFWS to minimize and provide mitigation for environmental impacts related to SWP maintenance.

Delta Cross Channel Standards. The winter-run chinook salmon biological opinion and May 1995 amendment, as well as the SWRCB Water Quality Control Plan, address operation of the Delta Cross Channel gates. From November 1 through January 31, the gates may close for a total of 45 days if migratory juvenile salmon are present. Full closure of the gates will occur between February 1 and May 20. Between May 21 and June 15, Delta Cross Channel gates are to be closed for 4 consecutive days each week, excluding weekends. No Delta Cross Channel operational measures were specified in the 1995 delta smelt biological opinion.

Delta Cross Channel gates closed on January 4 at the request of fishery agencies to create desired hydraulic conditions for a salmon-release experiment. The Cross Channel gates remained closed thereafter until the end of July due to sustained high Delta outflow and to protect fisheries. The gates opened again July 18, 1995, as the Net Delta Outflow Index finally dropped below 20,000 cfs. They remained open except for 2 high-flow days (September 20 to 21, 1995) through early December. The gates closed again on December 11 to assist salmon smolt outmigration from the Sacramento River and remained closed for the rest of 1995.

Sacramento and San Joaquin River Flow Requirements. The winter-run biological opinion amendment (May 1995) and long-term delta smelt biological opinion (March 1995) refer to the *Principles for Agreement* and SWRCB draft Water Quality Control Plan for river flow requirements. These documents stipulate that the base flow from the Sacramento River is to have a minimum monthly average flow rate that varies by month and depends on water year type. For September through December, a minimum flow of 3,000-4,500 cfs is required past Rio Vista. Operations of the CVP try to provide for a base flow from the San Joaquin River at Vernalis when monthly flow is less than 11,000 cfs from August to April, 6,000 cfs in May and June, and 9,200 cfs in July. A pulse flow is also provided in April and May to move delta smelt larvae spawned on the San Joaquin River to suitable rearing habitat in Suisun Bay.

Population Estimates

Figure 5-1 shows estimates of returning adult winter-run chinook salmon through 1995. The estimated escapement for 1995 rebounded from a low of 189 in 1994 to 1,361, which more than replaced the estimated 1,180 adults in the parent stock.

Figures 5-2 and 5-3 show abundance trends of delta smelt through 1995 for the midwater trawl and summer tow-net indexes, respectively. In 1995, a low summer index was followed by the seventh highest fall index in the period of record. Scientists do not know what causes the large fluctuation in annual abundance or the poor correlation between intra-annual abundance estimates.

Although the fall midwater trawl provides the best estimate of the relative year to year abundance of pre-spawning adult delta smelt, 1994 studies indicate that it may not be the most efficient gear to collect

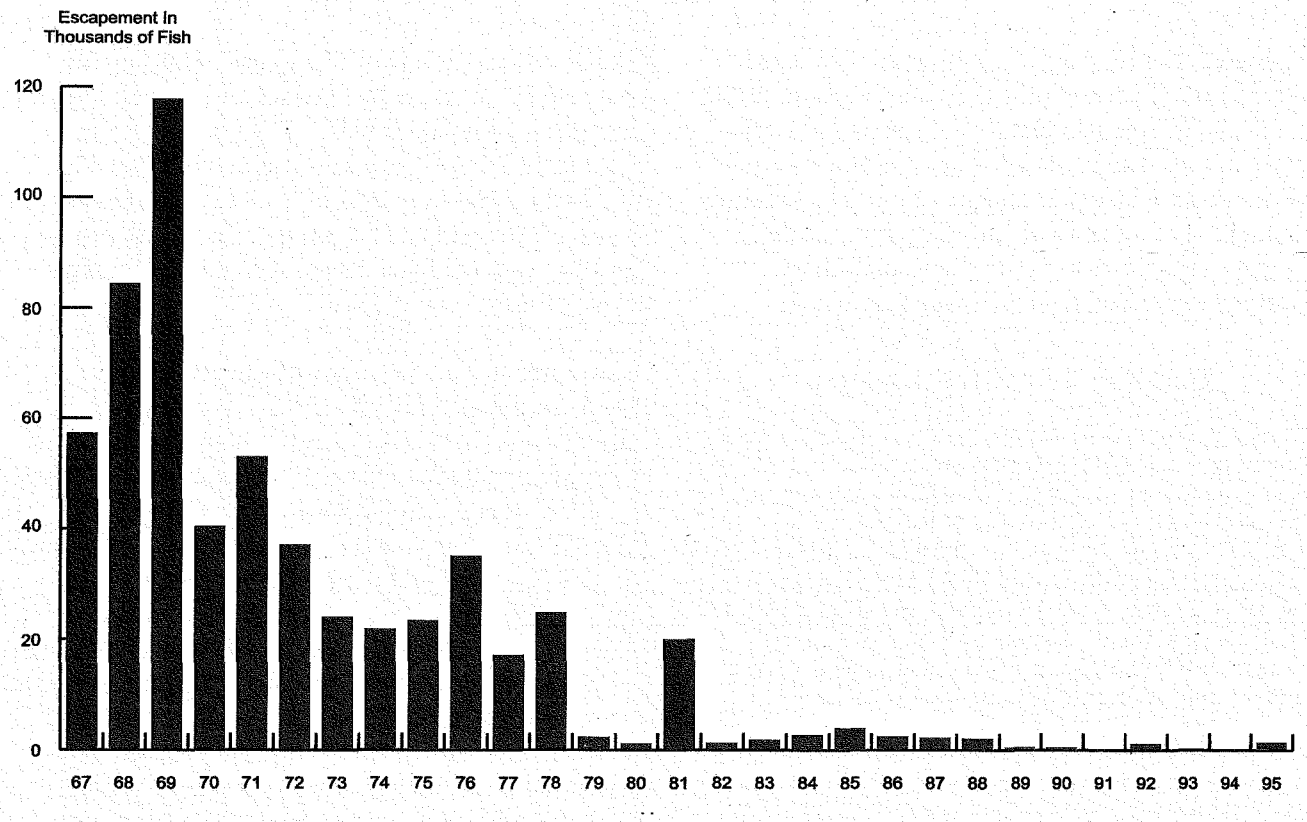


Figure 5-1
Estimated Total Winter-Run Chinook Salmon Escapement, 1967 through 1995

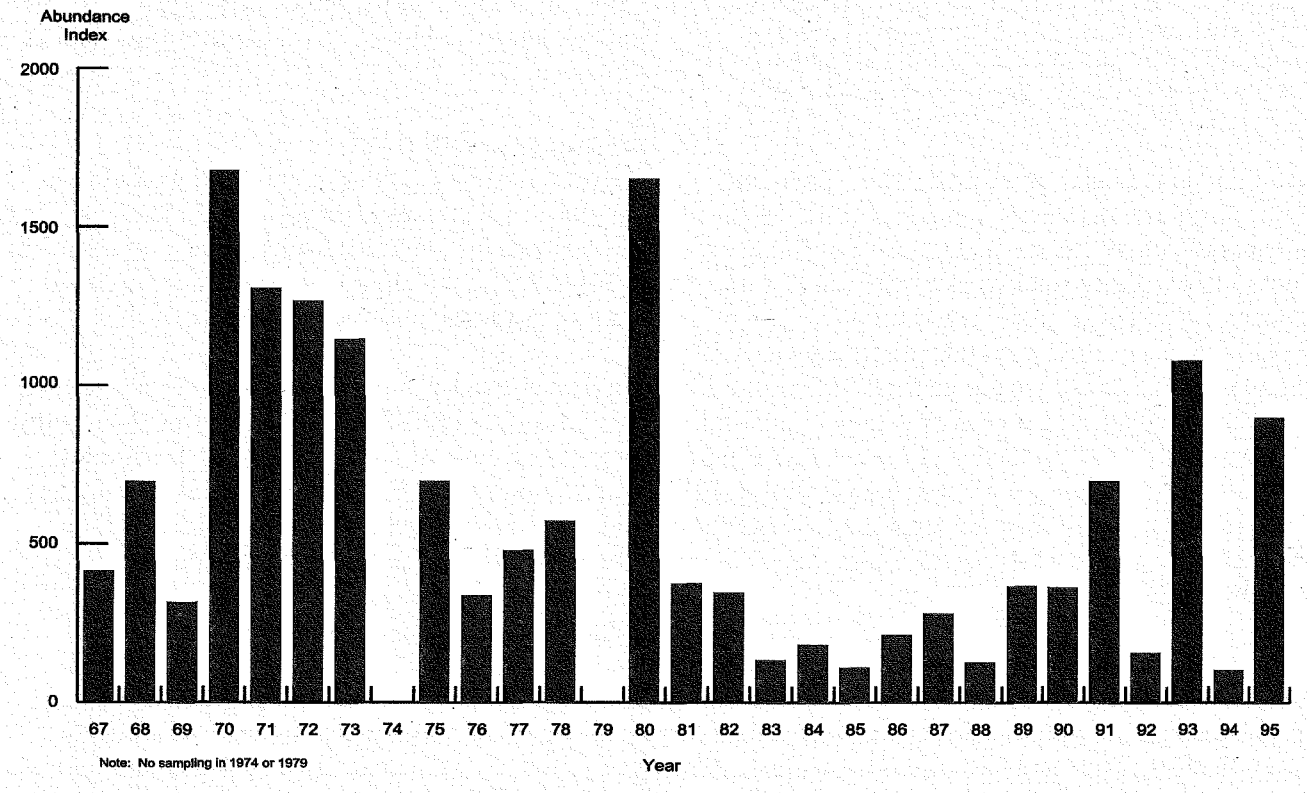


Figure 5-2
Delta Smelt Fall Midwater Trawl Abundance Indexes, 1967 through 1995

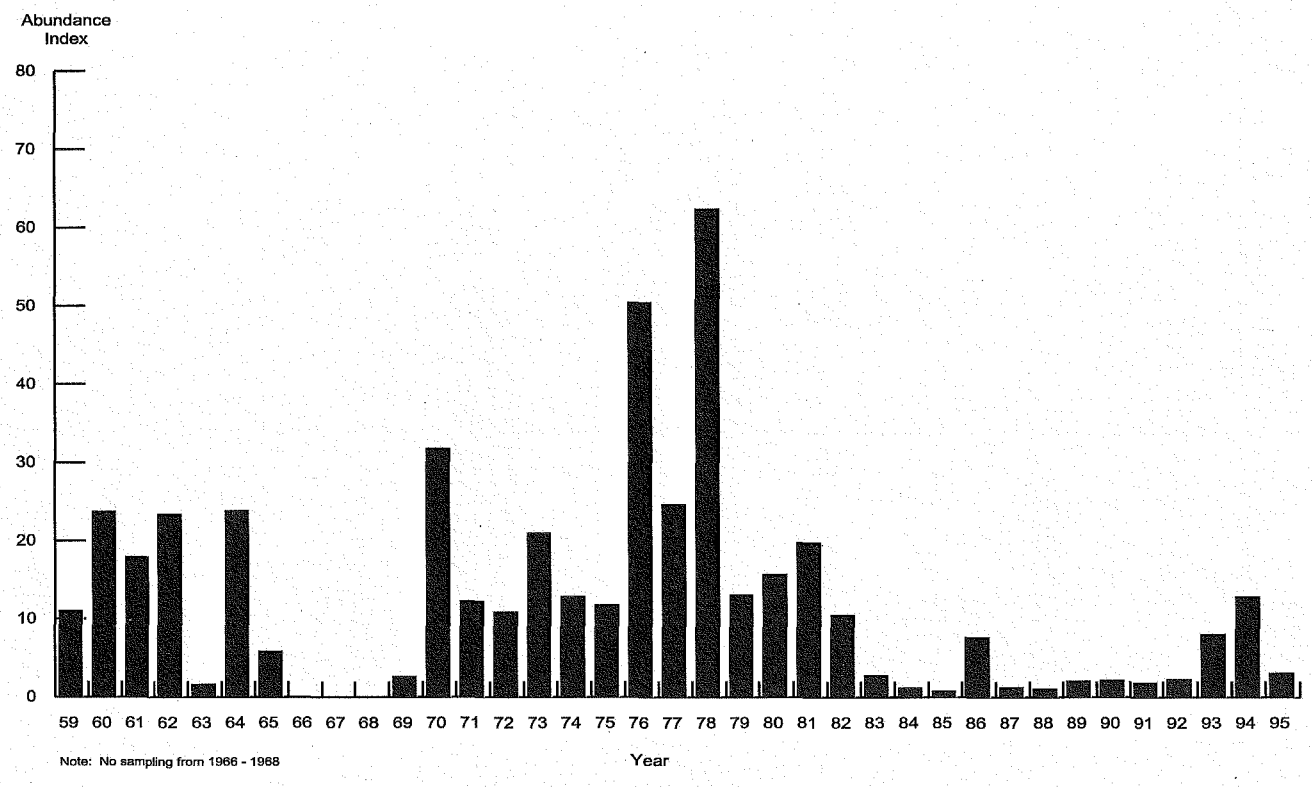


Figure 5-3
Delta Smelt Summer Tow-Net Indexes, 1959 through 1995

juveniles and adults. In these studies a new type of gear, the kodiak trawl was used to sample delta smelt. The kodiak trawl is a surface-oriented net towed between two boats, whereas the midwater trawl is towed through the water column (bottom to top) behind one boat. Because of the kodiak trawl's greater sampling efficiency, it was used to monitor smelt abundance for project operations. During 1995 real-time monitoring, both nets were towed at the surface and sampled the top 6 to 8 feet of water for surface-oriented species, such as chinook salmon. Delta smelt densities were relatively low throughout the interior Delta, but higher densities occurred downstream of the Delta. High flows during 1995 are thought to have shifted much of the population downstream into Suisun, and perhaps San Pablo, bays.

Figure 5-4 shows the fall midwater trawl indexes for Sacramento splittail for the period 1967-1995. The relatively low young-of-the-year index in 1994 is comparable to the low abundance observed during the recent 6-year drought. Several other abundance indexes show similarly low young-of-the-year abundance in dry years. Results for 1995, a wet year, indicate that exceptionally large numbers of young splittail were spawned in this year. The 1995 fall midwater trawl index is the third highest for the period of record. The high abundance in the Delta was confirmed by record salvage at both CVP and SWP intakes.

Petitions for Additional Listings

Federal fish and wildlife agencies are considering petitions to list additional fish species. However, the decision to list splittail as threatened was postponed until at least 1997. NMFS may act on a coastwide petition to list steelhead trout in 1997. In June 1995, NMFS accepted a new petition to list all chinook salmon on the west coast of the US as threatened and endangered. In October 1995, Senator Hayden petitioned the California Fish and Game Commission to list the spring-run chinook salmon as endangered. The Commission will act on the petition in 1996.

Georgiana Slough Acoustical Barrier

Past studies conducted under the auspices of the Interagency Ecological Studies Program demon-

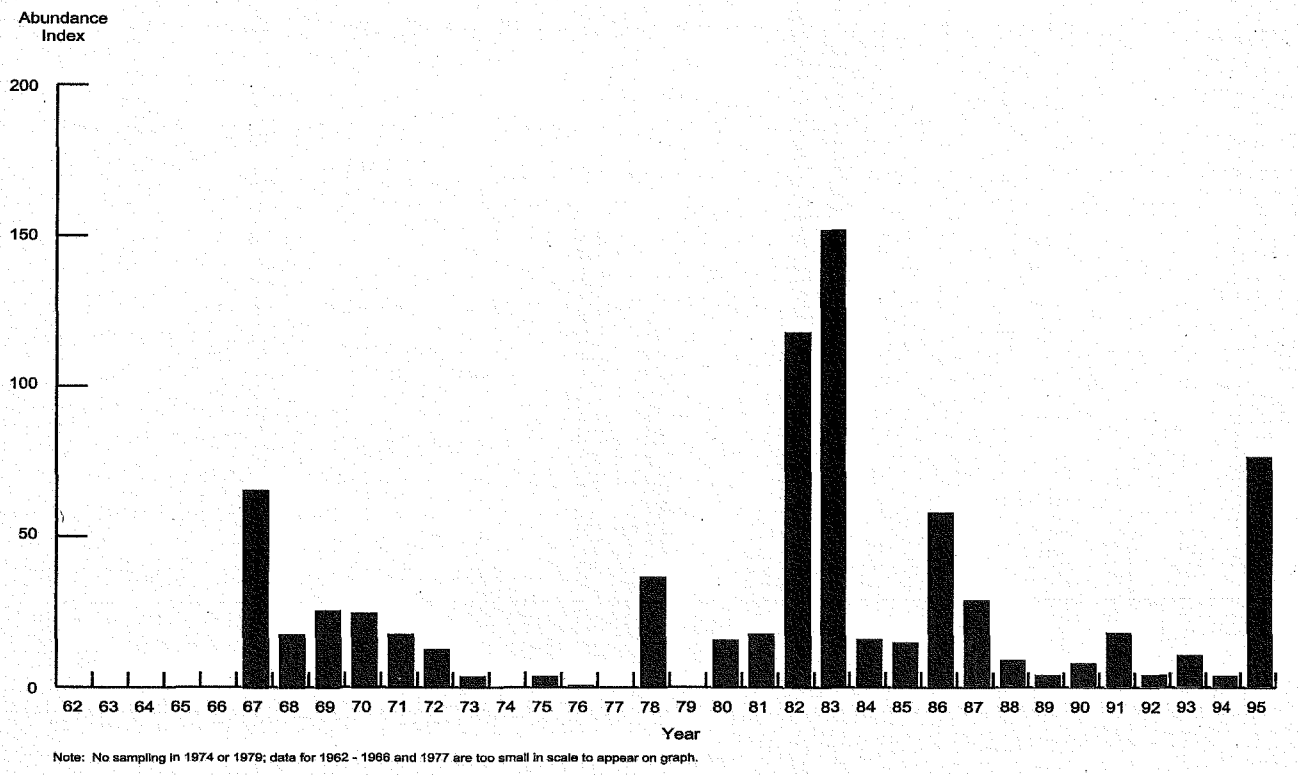


Figure 5-4
Splittail Abundance Index, Fall Midwater Trawl, 1962 through 1995

strated that juvenile Sacramento Valley chinook salmon migrating toward the ocean are more likely to survive if they stay in the main river channel when moving through the Delta. Those juveniles leaving the river by way of the Delta Cross Channel or Georgiana Slough appear to survive at about one-half the rate of those staying in the river. The winter-run biological opinion requires that the Delta Cross Channel gates be closed during the period when winter-run juveniles are actively migrating downstream. This closure also protects a portion of the late-fall, spring, and fall runs.

During 1993, 1994, and 1995, the Department and USBR funded a study to determine if more outmigrating salmon in the Sacramento River could be kept in the main channel by an acoustical barrier across the mouth of Georgiana Slough. Under contract to the San Luis and Delta-Mendota Water Authority, the Department and DFG conducted these studies through the Interagency Ecological Program. Survival is indexed by releasing large groups of specially tagged fish at various locations in the river and recovering some of the tags from netting downstream of the Delta (near Chipps Island) and from the ocean fishery.

Results of the 1993 and 1994 studies demonstrated that the acoustical barrier appears to deter juvenile salmon from entering the slough. Because of high river flows, the barrier was not installed in spring 1995, but field laboratory tests were conducted to investigate effects of sound exposure on fish. Apparently the young fish detect the low-level sound waves emitted by the 21 underwater speakers and avoid the speaker array, thus staying in the river. The exact guidance efficiency appears to vary with flow and tidal stage; 1994 tests averaged better than 50 percent.

Tests will continue through the spring of 1996 to provide the fisheries agencies with more data on guidance efficiency and any impacts on delta smelt, chinook salmon, and other fish. Agencies are concerned not so much with the exact guidance efficiencies but with possible effects of the sound field on other fish and other salmonid life stages. Biologists are particularly concerned that the sound may block or delay upstream adult winter-run salmon that use

Georgiana Slough as a migration corridor from reentering the Sacramento River.

Although the 1993 and 1994 tests indicated no need for concern in these matters, the 1995 evaluation should fully allay biologists' concerns.

Skinner Fish Protective Facility

The Skinner Fish Facility is located between Clifton Court Forebay and Banks Pumping Plant at the intake to the California Aqueduct. It was an original feature of the SWP, built to salvage fish from water being pumped from the Delta. Salvaged fish are transported by truck to release sites where they are less likely to return to the vicinity of the pumps in the southern Delta.

The Department has significantly improved the fish protective facilities since their construction in the mid-1960s. In the early 1980s, the screens themselves were improved and a new secondary screening system added. In the late 1980s, the Department began work on a holding tank building to improve efficiency of the fish salvage process and reduce stress (and losses) of the salvaged fish. New holding tanks are operational and provide fish protection and flexibility for the Department to comply with requirements of the biological opinions for delta smelt and winter-run chinook salmon.

Mitigation Projects

In 1986, the Department and DFG signed an agreement to mitigate for the direct losses of fish at the intake to the aqueduct. The agreement annually provides funds to implement fishery projects to replace fish lost at the intake facilities since 1986. 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 $13 million on mitigation projects developed under this agreement that includes placing gravel in streams, purchasing and planting hatchery-reared striped bass, and implementing a conjunctive use project to improve salmon migration in Mill Creek in Tehama County.

In 1995, the fish advisory committee that provides guidance on project selection recommended that the Department and DFG amend the agreement to allow additional years to spend the remaining $9 million of the $15 million lump sum provided in the agreement. 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. DFG and the Department are amending the agreement to provide the additional time and have tentatively allocated $2 million of the remaining funds to screening diversions in Suisun Marsh; $1 million to predator isolation projects on San Joaquin River tributaries; $2 million to a conjunctive use project to improve spring-run salmon migration in Deer Creek, Tehama County; and $4 million to a salmon and steelhead conservation hatchery on the Tuolumne River.

Other mitigation projects approved in 1995 for implementation from the agreement's annual and $15 million funds include:

- constructing a physical barrier near the confluence of the Merced and San Joaquin rivers to prevent adult chinook salmon from migrating up the San Joaquin River where there is no spawning habitat;
- increasing funds for a warden program to reduce illegal fish harvest in the Delta and some Central Valley streams;
- stocking 100,000 yearling striped bass;
- installing a backup generator and water system at the Merced River Fish Facility;
- constructing a fish screen in the Suisun Marsh; and
- operating a pen to acclimate hatchery-reared salmon during their release into San Francisco Bay, thereby improving their survival.

Predator Removal Program

A major source of mortality for fish nearing the intake to the Skinner Fish Facility screening system appears to be predation by 2- to 3-year-old striped bass. For example, tests show that estimated predator-related mortality of special releases of hatchery-reared fall-run chinook salmon has ranged from about 60 percent to over 95 percent. The formula for

National Marine Fisheries Service

The National Marine Fisheries Service has primary responsibility for the conservation, management, an development of living marine resources and for the protection of certain marine mammals and endangered species under numerous federal laws. As an agency within the U.S. Department of Commerce, NMFS has responsibilities to the commercial and marine recreational fishing industries and to the general public. NMFS also administers the federal Endangered Species Act with respect to marine and anadromous species such as the winter-run salmon. The mission of NMFS is to "achieve a continued optimum utilization of living marine resources for the benefit of the nation."

NMFS issues biological opinions, critical habitat designations, and recovery plans on winter-run chinook salmon and other anadromous salmonids in California and ensures that conditions specified in these opinions are met by the responsible agencies, including the Department of Water Resources.

estimating incidental take losses for winter-run salmon includes a 75-percent predation loss rate.

Although there are numerous questions about the accuracy and applicability of the predation loss rates, all evidence indicates that striped bass pose a threat to juvenile chinook salmon moving across Clifton Court Forebay to the screens. In 1994, DFG and the Department proposed to initiate a large-scale striped bass removal project at the forebay. Under these plans, several tens of thousands of striped bass in the 10- to 15-inch size range would have been netted from the reservoir and placed in fish transport trucks for release to San Pablo Bay or other distant locations.

Because striped bass fishing groups strongly opposed the proposed removal project, State agencies could not complete the necessary environmental documentation, and the predator removal test project could not be initiated. Meanwhile, studies with subadult stripers tagged with small acoustic transmitters demonstrated that striped bass appear to move freely between the forebay and the Delta. A more thorough investigation of this movement was conducted during summer 1995. The rapid exchange between Delta and forebay bass populations raises questions about the effectiveness of the predator removal program. Findings suggest that the fish might reestablish themselves in the forebay almost as rapidly as they were removed. Agency staff have shelved plans for a predator removal program for the forebay.

Feather River Fish Studies

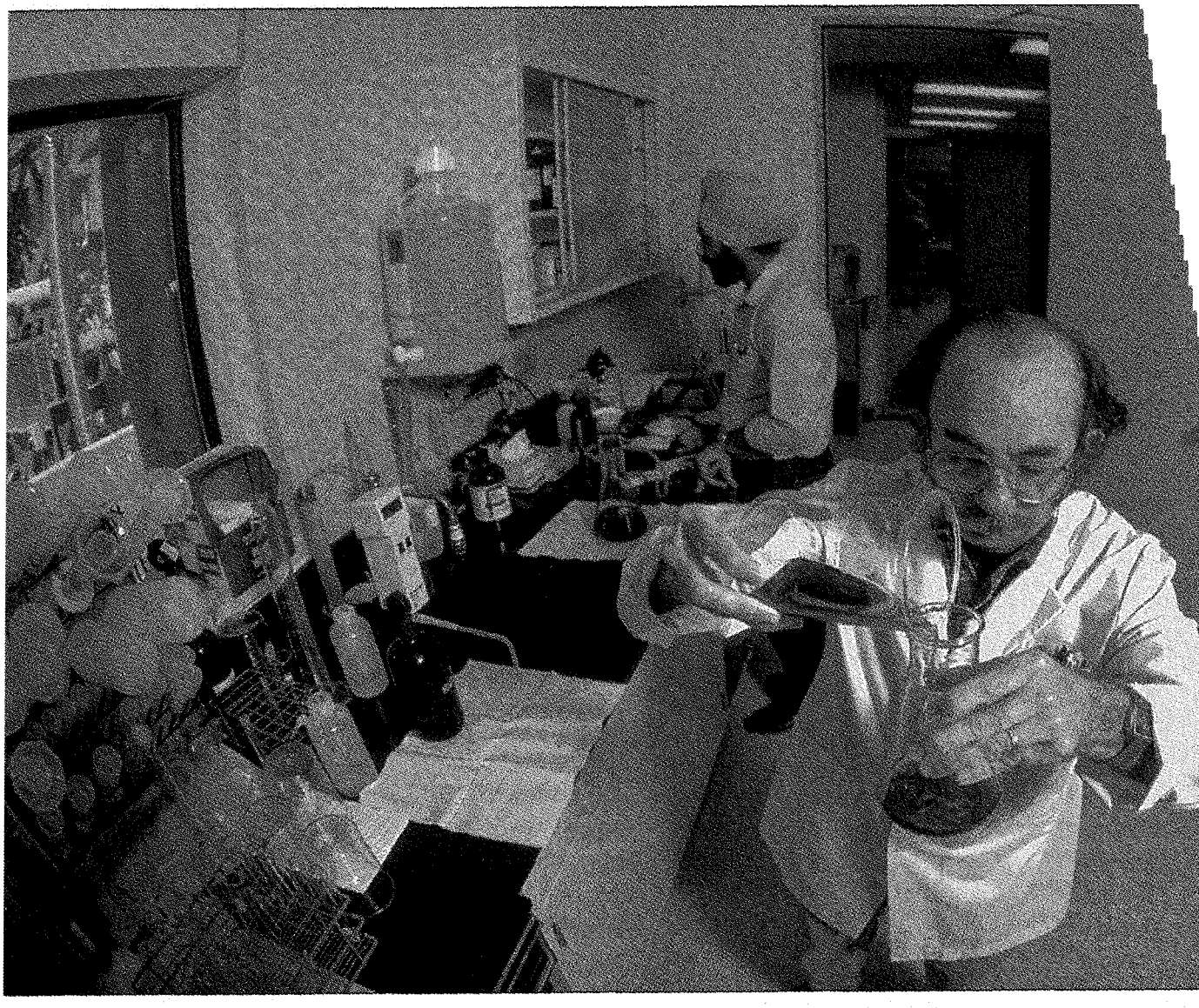
The Department and DFG began fish studies on the lower Feather River and the Feather River Hatchery. These studies support the Department's renewal of its FERC license to operate the Oroville facilities.

In 1995, instream studies evaluated the possible benefits of increasing flows in the low-flow section for spawning chinook salmon. Flows between the fish barrier dam and Thermalito complex are generally 600 cfs each year. DFG proposed that the flows be increased to 2,500 cfs from October through March to increase salmon spawning. In 1995, the Department held flows at about 1,600 cfs during the spawning period to determine if salmon spawned in deeper channels. The studies indicate that optimum spawning flows are about 1,000-1,200 cfs. More studies are scheduled for 1996. Increasing flows in this section cause loss in generating capacity since the flows bypass the turbines.

In 1995, the Department evaluated the Feather River Hatchery's fish harvest and escapement to the Feather River and other Central Valley streams. This evaluation consists of annually tagging several hundred thousand juvenile hatchery salmon with coded wire tags and then recovering the tags at various locations. At the Department's request, DFG also released tagged fingerlings and smolt salmon in the Feather River below the hatchery to evaluate survival rates through the Delta. The Department will wait to recover and decode the tags from adult salmon and then tabulate results of the study.

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

Chapter 6
Water Quality Program



Water quality technicians at work at Bryte

Significant Events

- *Principles for Agreement on Bay-Delta Standards between the State of California and the federal government on December 15, 1994.* The Bay-Delta Accord guided the State Water Resources Control Board's drafting of the 1995 Water Quality Control Plan.

- *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Estuary* (1995 Bay/Delta Plan). The draft was released on December 15, 1994, and final report adopted on May 2, 1995.

- Water Rights Order 95-6 amended Decision 1485 to be consistent with the Delta Accord on June 8, 1995. Water Rights Order 95-6 also allows the Central Valley Project and State Water Project to use either project's Delta pumping plant to pump project water to increase fish protection and maintain project delivery capability.

- *1996 Sanitary Survey Update of the State Water Project.* The report was prepared by the Department and the State Water Contractors, working closely with the Department of Health Services, in response to a DHS requirement for the submission of a final sanitary survey report by March 1, 1996. The report contains recommendations for further, detailed investigations to fully address potential contaminants in each watershed. Distribution copies of the report will be available in May 1996.

About 20 million Californians depend on the State Water Project for all or part of the water they use every day. The SWP also supplies water for agriculture, industry, power generation, recreation, and fish and wildlife. 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 Rights Orders 95-1 and 95-6, to be consistent with the *Principles for Agreement on Bay-Delta Standards* (December 15, 1994).

The *Principles for Agreement*, formulated by CALFED and representatives of several urban, agricultural, and environmental groups, are intended to be effective for 3 years until the adoption of final Delta water quality standards. The Agreement established new outflow standards, modified implementation of the Endangered Species Act to increase water project operations flexibility, and contained a funding mechanism for non-flow related measures (Category III). (See Chapter 1, Executive Summary).

Both the CVP and SWP operate in accordance with biological opinions for winter-run chinook salmon and delta smelt. The opinions for winter-run salmon and delta smelt were revised May 17, 1995, and March 6, 1995, respectively, to conform with the 1994 *Principles for Agreement*.

The Department also conducts special studies to investigate potential water quality problems. In 1995, these studies included: an assessment of *Giardia* and *Cryptosporidium* (human health pathogens) in the California Aqueduct and Southern California reservoirs; the removal of pondweed buildup in the Clifton Court Forebay; and turbidity studies following the flood damage to the aqueduct.

The Department conducts extensive monitoring activities to protect beneficial uses of water in the Delta and Suisun Marsh as required by SWRCB D-1485, amended by WR 95-6, that included some but not all of the water quality objectives put forth in the SWRCB's 1995 Water Quality Control Plan. The Department and the U.S. Bureau of Reclamation agreed to operate under the *Principles for Agreement* shortly after its release in December 1994. In addition, National Marine Fisheries Service and U.S. Fish and Wildlife Service, through ESA, issued operations criteria for the SWP and CVP. Figure 6-1 shows water quality monitoring sites throughout the Sacramento-San Joaquin Delta.

SWRCB Bay-Delta standards are conditioned by water year type and, in general, become less stringent in more critically dry years. The water year classification system provides relative estimates of the available water supply originating in a basin from rainfall and snowmelt runoff, and groundwater accretion. The 1995 WQCP standards apply 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 1995 WQCP further refined the 40-30-30 Water Year Index by eliminating the subnormal snowmelt and "year following dry or critical year" provisions found in D-1485.

The new forecast method incorporates seasonal differences in water contribution for the year and

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

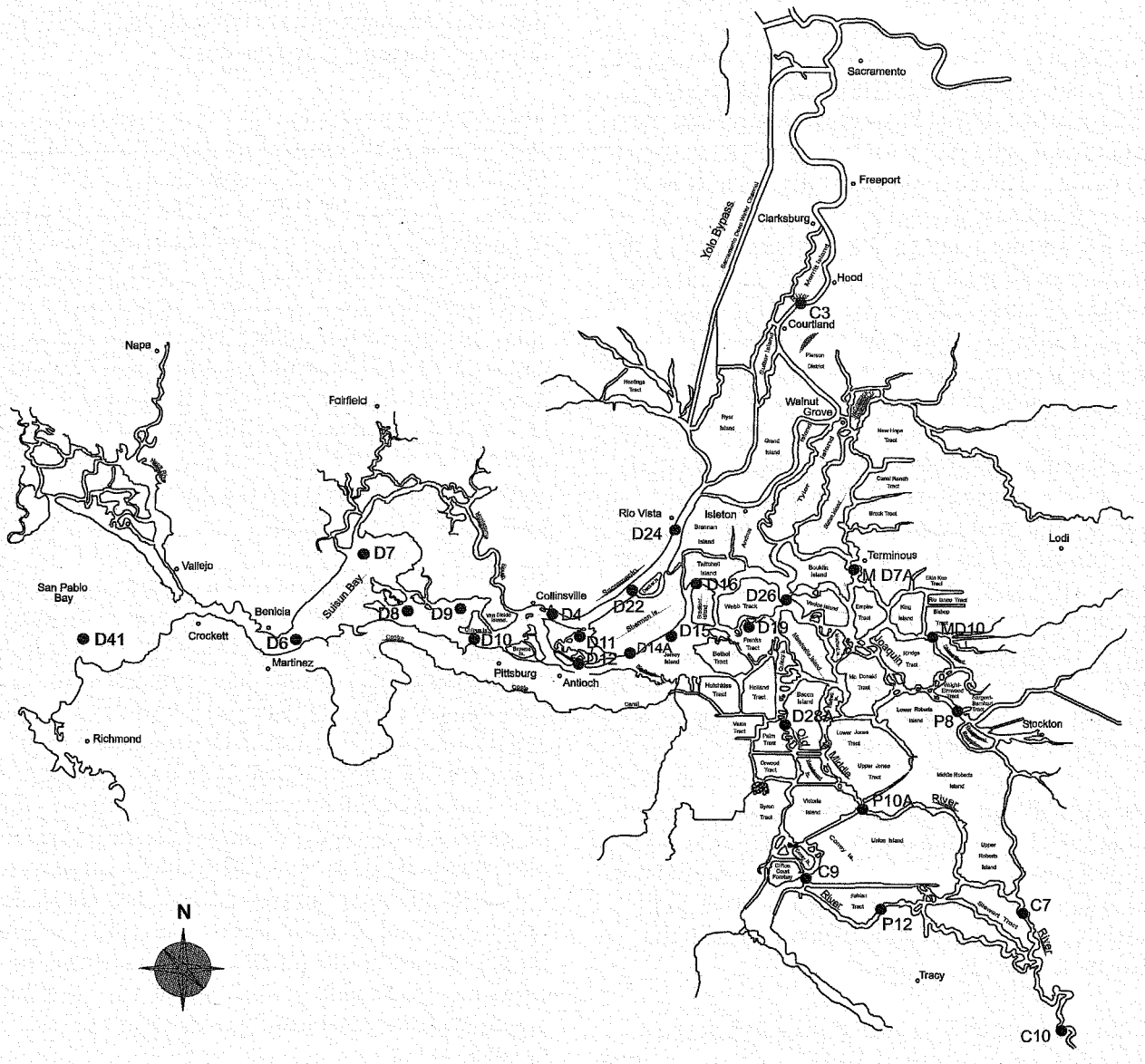


Figure 6-1
Water Quality Monitoring Stations in the Sacramento-San Joaquin Delta

includes the addition of carryover storage to establish a more reliable forecast for water year deliveries. The Sacramento Valley Unimpaired Runoff sums the major flows into the Sacramento Basin. The varying factors (40-30-30) summed in the new index are, respectively, percentages of the contribution of the current year's April-July SVUR, projected current October through March SVUR, and the previous year's index (with a 10 million acre-feet cap limit).

The 1995 WQCP also calculates a San Joaquin River Basin 60-20-20 Index using 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 1995 WQCP's fish and wildlife salinity/flow standard at Chipps Island and, under specific conditions, at Port Chicago during February through June.

The May 1, 1995, SVUR forecast was 33.1 million acre-feet and 180 percent of average. The resulting 40-30-30 water supply index was 12.4 million acre-feet resulting in the 1994-95 water year classification of "wet" for all beneficial uses. The actual 1995 water year runoff totaled 35.1 million acre-feet and was more than four times the 1994 actual water year runoff (7.8 million acre-feet). The new 60-20-20 San Joaquin Region water supply index was also classified as "wet" for 1995.

Water Supply Conditions

The 1994-95 water year was the wettest year since the 1982-83 season and the second wettest water year of record (since 1922) in the Sacramento River region. Excess conditions were in effect in the Delta for the entire calendar year of 1995, which allowed unusual flexibility in project operations. This was the longest period of excess conditions, as defined in the Coordinated Operation Agreement between the Department and USBR, since the 1982-83 period.

Delta outflow cannot be measured directly due to the major tidal influence in the Delta. An approximation of Delta outflow is calculated instead using measured inflows, exports, and estimated in-Delta water use. A more accurate method for calculating Delta outflow was introduced in the 1995 Bay-Delta Plan. This new index, the Net Delta Outflow Index, considers inflows of the Yolo Bypass system, the eastside stream system (the Mokelumne, Cosumnes, and Calaveras rivers), San Joaquin River at Vernalis, and Sacramento Regional Treatment Plant. The major Delta exports and the estimated in-Delta water use is deducted from the cumulative inflow total to produce the index. The NDOI became effective for use in Delta standards compliance on January 1, 1995.

The NDOI calculated flows cannot be directly compared to the prior year's Delta Outflow Index, as the Sacramento River bypass flows and several eastside stream flows were not included in the DOI calculation. These flows can be quite substantial during high flow periods. In 1995, the Yolo Bypass flows contributed 22 percent of total Delta inflow and, during the extremely high flow events of March, contributed over 60 percent of inflow.

Delta outflow, as estimated by the NDOI, averaged 60,495 cfs (daily rate) during calendar year 1995. There were four major inflow peaks that sustained flows over 100,000 cfs between early January through late July. The NDOI peak during March contained the year's highest mean daily inflow of 353,194 cfs on March 13 during a 15-day period of inflow over 200,000 cfs that averaged 272,328 cfs.

With the final snowpack runoff tapering off at the end of July, NDOI averaged less than 15,000 cfs until early December rains. This lower flow period contained the year's lowest mean daily NDOI—3,460 cfs on October 29, 1995.

Operations under the Agreement, 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 *Principles for Agreement* beginning January 1995. The agreement established water quality, flow, and operational criteria for the estuary. Operations of the CVP and SWP were to be assisted by the CALFED Ops Group through coordination with CVPIA and ESA 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 protect targeted fish species from entrainment at the Delta facilities of the SWP and CVP and provide water supply reliability. In 1995, real-time monitoring specifically targeted winter-run chinook salmon, delta smelt, and the Sacramento splittail. The splittail was proposed for listing under ESA in 1994.

The real-time monitoring program consists of fish salvage counts at the CVP and SWP fish salvage facilities, collection of fish from strategically selected sites within the Delta, and a Delta-wide fish distribution survey targeting small juvenile fish. The fish salvage counts are expanded by factors that account for predation and handling losses. If the combined (CVP Tracy and SWP Skinner Fish Facility) fish salvage counts approach the numerical action levels for either winter-run salmon or delta smelt set in the biological opinions, the Department and USBR are required to submit proposed actions to reduce the salvage number to the working group or operations group.

Water Quality Standards

In 1995, all SWRCB and ESA water quality requirements for wet years were met. The San Joaquin River salinity standard at Prisoners Point and the Jersey Point standard require a 14-day running average of EC at less than or equal to 0.44 µS/cm. High seasonal flows and water releases to benefit migrating fish helped maintain EC well below the standard even while extending compliance through May.

The SWRCB "wet year" municipal and industrial water quality standard for chloride at the Contra Costa Canal Intake near Rock Slough—less than 150 mg/L for 240 days (66 percent of calendar year)—was easily met throughout the entire year.

The estuarine habitat protection standard incorporated a modified X2 criteria first established in the 1994 Delta Smelt Biological Opinion. The standard limits 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. Adequate flows must be released to maintain the isohaline within a certain range of positions in the estuary. These positions (Chipps Island or Port Chicago during February through June) are associated with fish and biota abundances. The number of days per month when the daily averaged EC maximum (2.65 µS/cm) is in effect at Chipps Island and, under specific conditions, at Port Chicago are conditioned by the previous month's Eight River Index.

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, the SWRCB issues permits for the use of all water except ground water 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, the 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, the Board updated its Water Quality Control Plan and it was adopted on May 2, 1995. Water Rights Order 95-6 amended D-1485 to be consistent with the plan on June 8, 1995. Water Rights 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 X2 criteria requires that a 2 ppt isohaline be maintained at or west of Chipps Island for a specified number of days each month based on the previous month's Eight River Index. This EC standard may be alternately met with specific outflow conditions and may be relaxed in drier year types. The Port Chicago standard is in effect only during months when the average of the previous 14 days immediately prior to the first day of the month is less than or equal to 2.64 µS/cm. The standard becomes effective in February when the January Eight River Index is greater than 1 million acre-feet. The Chipps Island recorder was not

available during the standard period and the standard was met using alternate outflow criteria (3-day running average NDOI > 11,400 cfs). The recorded Port Chicago mean daily EC value remained below the 2.64 µS/cm during all of February, April, and May. EC rose above 2.64 µS/cm for 2 days in March and 5 days at the end of June; however, high Delta outflow easily met the alternate flow criteria (3-day running average NDOI > 29,200 cfs) during these periods.

Flow Standards

D-1485 sets year-round minimum salmon migration flows 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 includes operations to meet wet year mean monthly flow objectives—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 never fell below a mean monthly flow of 6,973 cfs during 1995 or a daily rate of 5,882 cfs.

Wet year, monthly-flow objectives also include for NDOI from May to July at 14,000 cfs (May 6 to June 30) and 10,000 cfs during July for fisheries protection. The NDOI never dropped below 35,000 cfs during May and June and averaged 70,502 cfs. July NDOI averaged 30,505 cfs. Wet year, high-flow conditions easily meet all Rio Vista and NDOI flow objectives. ESA-related outflow criteria set flow minimums during January and July to December between 4,000 cfs and 6,000 cfs, all easily met in 1995.

The ESA biological opinions for winter-run salmon also included base flows in the San Joaquin River at Vernalis at 3,420 cfs for the periods from February to April 14 and May 16 to June 30.

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 with 7-day average not less than 20 percent of period mean (greater than 6,896 cfs). An additional October requirement calls for a minimum monthly San Joaquin River flow rate of 1,000 cfs with an additional 28,000 acre-feet pulse/attraction flow to bring San Joaquin River flows to 2,000 cfs. The timing and duration of the pulse/attraction flow is based on real-time monitoring data and determinations made by the CALFED Operations Group. San Joaquin River flow at Vernalis averaged 18,365 cfs for February to June. The April 15 to May 15 pulse flow mean was 19,554 cfs and never dropped below 16,854 cfs for the period. Flows during October averaged 5,764 cfs and rose to a period peak flow of 7,296 cfs on October 17, 1995.

Export Standards

Water Right Order 95-6 allows the CVP and SWP to use either project's pumping plants to pump project water to increase fish protection, with concurrence of the Ops Group and permission of SWRCB. Water Right Order 95-6 eliminated the D-1485 May to July export limits, but added new export restrictions based on Delta inflow and San Joaquin River flow. These limits are intended to be used with extensive real-time monitoring designed to detect fish in the areas adjacent to the pumps. The first new limit restricts exports to a specific percentage of Delta inflow; 35 percent of Delta inflow from February through June and 65 percent for the remainder of the year.

The actual export amount is calculated using the 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 is then determined by dividing this sum by the total inflow into the Delta. The export/inflow ratio limit is reported as a 3-day running average, the Delta inflow as a 14-day running average. This changes during CVP or SWP storage withdrawals for export from upstream reservoirs, when both export rate and the Delta inflow are 3-day running averages. The export/inflow objective during February may be relaxed during drier years to between 35 and 45 percent, based on the Eight River Index.

The second new limit restricts exports during the 30-day pulse flow period from April 15 to May 15 when exports are limited to 1,500 cfs or 100 percent of the San Joaquin River flow at Vernalis, whichever is greater. This export limit will be used in lieu of the 35 percent export limit only if it results in more restrictive conditions. Real-time monitoring events

will also be considered in setting exports (see Chapter 5).

The export/inflow ratio averaged only 18.4 percent during 1995. During the more restrictive February to June period, extremely high flows and limited downstream demand dropped the ratio to only 6.2 percent. The July to December average reached 26.8 percent with a daily maximum diversion of 64.3 percent on October 30, 1995, coincidental with the lowest NDOI on October 29, 1995. Diversions at Banks Pumping Plant were highest during January 1995 and averaged 7,455 cfs per day.

Four new pumps completed in 1994 make a total of 11 pumps at Banks Pumping Plant, bringing pumping capabilities to 10,300 cfs. Diversions are currently limited to 6,400 cfs by agreement with the U.S. Army Corps of Engineers, except from mid-December to mid-March when the San Joaquin River flow exceeds 1,000 cfs, as in January 1995.

In May 1995, the Ops Group met with CVP and SWP operations staff, Department of Fish and Game, U.S. Environmental Protection Agency, USFWS, and San Joaquin tributary operators to discuss coordination of San Joaquin flows and Delta operations during the April to May San Joaquin pulse flow period. The pulse flow will provide additional protection to outmigrating salmon and improve habitat conditions for delta smelt. Factors considered included modification of upstream flood control releases, CVPIA releases, and export reductions during the pulse flow. Pumping at the Banks and Tracy pumping plants remained at low levels beginning the first week in May through May 15 to maintain a total export rate objective set at 20 percent of San Joaquin River flow. San Joaquin River outflow measured at Vernalis averaged 19,555 cfs during the same period. These high San Joaquin River outflows made possible a combined export that averaged 3,880 cfs, a level below 20 percent of Vernalis flow. The Tracy facilities pumped over 80 percent of the combined exports. The export/inflow ratio for the period was only 3.7 percent.

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 program included proposals to construct up to four barriers in the south Delta during a 5-year test period to precede construction of the permanent barriers. The barriers will improve local water levels and circulation patterns, protect fishery resources, and meet other South Delta Water Management Program objectives. The previously installed temporary barriers are located on Middle River, Old River at Tracy, and Old River at head.

In 1995, the Department applied for permits with DFG and the Corps for a barrier on Grant Line Canal, east of the Tracy Boulevard Bridge. The Grant Line barrier is the last barrier proposed in the South Delta Temporary Barriers Project. It will enhance water levels, quality and circulation, and fish migration in the south Delta and improve agricultural operations as specified under the South Delta Water Agency Agreement. The Grant Line Canal barrier installation was postponed due to concern for nearby endangered Swainson's hawk nesting sites. The temporary barrier project was scheduled to end in 1995; however, the Department received a 5-year program extension.

Since 1969, a seasonal fall and spring barrier has been installed on Old River at head—where it meets the San Joaquin River—to prevent salmon from straying from their migration path into interior Delta sloughs and channels. The Old River barrier at head was not installed during 1995. The installation of the barrier during the high San Joaquin River spring flows posed a threat of upstream flooding and levee or bank erosion. Continuing high flows in the fall made installation of the fall barrier unnecessary.

Under DFG agreements, the Tracy barrier and the Middle River barrier cannot be completed before June 1 if the Old River at head barrier is not in place. In June 1995, the Department requested permit revision from the Corps and DFG to reschedule installation of the other barriers from April or May to August. The barriers on Old River near Tracy and Middle River were installed August 8 and 11, respectively. These barriers are used to improve water circulation and control water levels during the agricultural irrigation season.

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. It has been placed annually since 1987 as specified in an agreement with the Department and South Delta Water Agency (1986). The Middle River barrier was removed October 10, 1995.

The Old River barrier at Tracy is a temporary barrier that has been installed annually in spring 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. The Tracy barrier was removed October 6, 1995.

Other Activities in the Delta

In accordance with its identified goals and strategies, the Department occasionally assists in emergency management to assure water supply reliability and safeguard life and property. In 1995, the Department helped alleviate the impact of an unforeseen unique event that occurred at the U.S. Bureau of Reclamation's Folsom Dam. On June 17, 1995, a broken radial arm on a spillway gate allowed uncontrolled releases of around 40,000 cfs to escape from Folsom Dam. USBR immediately filed a petition with the SWRCB for a temporary urgency change to redivert water spilling from Folsom Lake. The Board issued Water Rights Order 95-12 on July 19, 1995, approving temporary use of available SWP Banks Pumping Plant capacity to meet downstream demands supplied from San Luis storage. An estimated 350,000 acre-feet were lost from Folsom Lake before the reservoir dropped to about 10 feet above the spillway crest at the bottom of the gate. The Department was able to divert only 28,417 acre-feet for the CVP from July 21 through July 30 due to its own downstream demands. The CVP supply constituted 28.9 percent of the total exported at Banks Pumping Plant during this period.

Bryte Laboratory

The Department's extensive water quality investigations result in thousands of samples annually that require laboratory analysis. Bryte Laboratory, located in West Sacramento, is the primary source of analytical capability utilized for analysis of these samples. The laboratory, which is organized within the Division of Local Assistance, provides service to clients throughout the Department and to other agencies. A wide range of analyses are performed, including minerals, nutrients, metals, pesticides, and a number of other types of analyses. The laboratory undergoes continual modernization as new substances become the focus of attention, and as newer, more accurate, analytical methodology is developed. Because of rapid developments in the field of water quality, the laboratory is constantly evolving, like the programs it serves.

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, power plants, and check structures of the South Bay, Coastal Branch, and 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, 17 automated stations are maintained for continuous monitoring of aqueduct water. The Department formerly maintained two analytical laboratories—the Bryte Laboratory in West Sacramento and the Castaic Laboratory in Southern California. In 1995, the Castaic lab closed and Bryte Laboratory assumed responsibility for 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. SWP water quality data are available electronically through the DWR Internet home page (www.water.ca.gov) and reported monthly in the *State Water Project Operations Data Report.* Table 6-1 presents laboratory results of sampling at several representative stations during 1995.

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

California Aqueduct Sediment Inflows Associated with March 1995 Flooding Events

During 1995, several events dramatically increased water supply, but also caused wide-spread water quality and maintenance problems along the California Aqueduct. Annual total inflow to the San Luis Canal joint reach section of the California Aqueduct (Pool 13-21) totaled 25,932 acre-feet and was the second highest on record (1973-95). Although storm flows were significantly large during January and March, March 1995 flood inflows had a particularly heavy impact on the Aqueduct and constituted over 77 percent of 1995 inflow (20,054 acre-feet). That month, the Cantua Creek drain inlet contributed the greatest inflow (5,967 acre-feet), followed by the combined inflow from overtopping and breaks in the aqueduct walls (5,010 acre-feet). The Arroyo Pasajero Basin, through its Gale Avenue drain inlet, also contributed significant inflow (4,144 acre-feet). Other drain inlets and floodwater pump-ins in the San Luis Canal contributed 2,840 acre-feet.

On March 10, high winds and heavy aqueduct side flows crested the aqueduct levee at milepost 135.96 (near Salt Creek drain inlet) and at milepost 138.96. Further topping of the levee occurred the next day between milepost 134.93 (Cantua Creek) and milepost 135.15 (Witney Avenue). At least 20 canal lining panels were destroyed. In anticipation of further flooding into the San Luis Canal, downstream pools 22-40 were filled to above absolute maximum capacity to create flood capacity in pools 13-21.

On March 11, further downstream in the Arroyo Pasajero area, record flows greater than 25,000 cfs filled the flood impoundment area adjacent to the Aqueduct. This forced the release of up to 3,000 cfs into the Aqueduct through the Arroyo Pasajero's Gale Avenue inlet gates. During this period, a power outage prevented water passage through an additional evacuation culvert under the Aqueduct for many hours. When finally opened, the culvert passed the flood water at a rate of 1,000 cfs (approximately 5,024 acre-feet), but not before the Aqueduct was overtopped north of the Gale Avenue inlet (pool 20, milepost 157.42) through a large break in the containment dike. An uncontrolled flow of 2,635 acre-feet entered the Aqueduct through this breach. Inflows ceased on March 14 when the embankment was repaired.

In response, the Kern River Intertie gates (pool 29) opened on March 11 to pass flows into the Kern River. Releases through the intertie reached 5,500 cfs on March 12 for a total of 11,850 acre-feet through March 14. On March 12, intertie flows were greatly decreased as they posed a danger to the Highway 58 bridge over the flood channel.

The Arroyo Pasajero flooding problems contributed to the downstream shutdown of the water treatment plant for the city of Avenal (off pool 21). High silt loads carried by storm inflows combined with a

Table 6-1
1995 Water Quality at Selected State Water Project Locations

Constituents	Units	Reporting Limit < than	Thermalito Afterbay Outlet to Feather River mean	North Bay Aqueduct Barker Slough Pumping Plant mean	Banks Pumping Plant 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 Maximum
Alkalinity	mg/l	N/A	32 (c	94	51	58	62	58	63	66	N/A
Arsenic	mg/l	0.001	0.001 (c	0.002	0.002	0.002 (b	0.002	0.002	0.002	0.002	0.05 max
Boron	mg/l	0.1	0.1 (c	0.2	0.2	0.2	0.2	0.2	0.2	0.2	N/A
Bromide	mg/l	0.01	0.01 (e	0.05	0.09	0.13 (b	0.15 (e	NR (a	0.15 (d	0.18 (d	N/A
Calcium	mg/l	1	7 (c	15	15	18	23	18	20	19	N/A
TOC	mg/l	0.1	NR (a	10	4	4 (b	5 (e	NR (a	4 (d	4 (d	N/A
Chloride	mg/l	1	1 (c	22	31	46	43	44	46	54	110/55
Chromium	mg/l	0.005	0.005 (c	0.005	0.005	0.005 (b	0.005	0.005	0.005	0.005	N/A
Copper	mg/l	0.005	0.005 (c	0.005	0.005	0.005 (b	0.005	0.005	0.005	0.005	3 max
Flouride	mg/l	0.1	0.1 (c	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.5 max
Hardness	mg/l	1	30 (c	95	72	88	103	87	90	91	180/110
Iron	mg/l	0.005	0.023 (c	0.074	0.053	0.047 (b	0.032	0.025	0.027	0.010	N/A
Lead	mg/l	0.005	0.005 (c	0.005	0.005	0.005 (b	0.005	0.005	0.005	0.005	0.1 max
Magnesium	mg/l	1	3 (c	14	8	10	11	10	10	10	125 max
Manganese	mg/l	0.005	0.006 (c	0.033	0.021	0.009 (b	0.007	0.005	0.005	0.006	N/A
Nitrate + Nitrite	mg/l	0.01	0.03 (c	0.27	0.68	NR (a	NR (a	NR (a	0.71	0.44	N/A
Phosphorus-Ortho	mg/l	0.01	0.01 (c	0.12	0.08	NR (a	NR (a	NR (a	0.09	0.07	N/A
Phorphorus-Total	mg/l	0.01	0.02 (c	0.27	0.13	NR (a	NR (a	NR (a	0.16	0.09	N/A
Selenium	mg/l	0.001	0.001 (c	0.001	0.001	0.001 (b	0.001 (b	0.001	0.001	0.001	0.05 max
Sodium	mg/l	1	3 (c	27	27	37	45	38	39	46	N/A
Specific Conductance	µS/cm	5	71 (c	305	284	367	422	364	375	412	N/A
Sulfate	mg/l	1	2 (c	24	30	40	71	42	46	49	110/20
Dissolved Solids	mg/l	1	50 (c	185	166	212	257	212	226	245	440/220
Trihalomethane Formation Potential	µg/l	1	NR (a	1135	514	548	592	NR	501	473	N/A
Zinc	mg/l	0.005	0.005 (c	0.005	0.005	0.005 (b	0.005	0.006	0.005	0.008	15 max

Notes: Nondetectable values assumed equal to reporting limits for calculation of mean.

a) NR = data not collected or recorded at this location.
b) Mean of eleven values.
c) Mean of ten values.
d) Mean of eight values.
e) Mean of four values.

water main break soon overwhelmed the treatment plant's filtering capacity. In addition, a Chevron oil pipe ruptured in the Arroyo Pasajero watershed on March 10. An estimated 4,400 barrels (180,000 gallons) of crude oil poured into the ponding basin before repairs were made. Chevron Corporation immediately set up oil booms at milepost 155.7 and at the impoundment breach.

The Gale Avenue inlet gates closed as potentially oil-laden flow approached. Both the San Luis Field Division Surveillance Unit and Chevron personnel conducted special water quality studies from the Aqueduct both upstream and downstream of the breach and in the impoundment basin. Volatile organic hydrocarbons were below drinking water MCLs (maximum contamination levels) with the exception of low levels of benzene. All volatile organics in the Aqueduct declined to levels near or below the reporting limit after 4 days.

Floodwater inflows to the San Luis Canal in 1995 carried in tons of sediment. This sediment was either transported downstream as suspended solids or settled out on the Aqueduct floor. Estimates of total sediment were between 600,000 and 1,400,000 cubic yards. Approximately 55,000 cubic yards were removed. Suspended sediment is undesirable because it is thought to increase wear on pump impellers and shafts at downstream pumping plants. Highly sediment-laden water also poses a health threat by interfering with water treatment processes, including disinfection, at treatment plants along the Aqueduct. High turbidity is also a concern for groundwater recharge and agricultural drip irrigation operations.

The Aqueduct was designed with sand traps to aid in the capture and removal of sediment bedload. Four sand traps are located in the San Joaquin Field Division, five situated on the Coastal Branch, and 20 in the Southern Field Division—one before each check structure. The Edmonston Pumping Plant's Forebay also settles out sediment. However, the high sediment loading from the March flood event overwhelmed the system's capacity to facilitate removal.

During June, unusually high turbidities continued in water deliveries to Kern County Water Agency and other downstream contractors south of Cantua and Salt creeks. In response, the Aqueduct was surveyed at 18 sites on a 38-mile stretch from Cantua Creek to the Arroyo Pasajero area in August in preparation for dredging. Sediment samples were collected using both corer- and dredge-type samplers. Sediment was characterized for size and analyzed for asbestos, metal, and mineral content. Over 95 percent of the material collected was small clay- and silt-sized particles. No unusual levels of chemical, metal or mineral content were measured.

In May 1996, the Aqueduct was dredged at three separate locations to remove sediment loads:

- between milepost 153.3 and 155.6 (pool 19),
- downstream of the Cantua Creek Inlet at milepost 135 (pool 18), and
- near the Arroyo Pasajero levee break at milepost 157.4 (pool 20).

Dredging began on May 5, 1996, at milepost 153.3 for a 10-day period. Water quality measurements for turbidity indicated that average daily turbidity was more influenced by aqueduct flow than dredge activity, as higher flow rates tended to resuspend bed sediment. May dredging removed roughly 40,000 cubic yards. Water quality parameters including turbidity, trace elements, minerals, and asbestos levels were measured in grab samples collected four times per day at locations upstream and downstream from the dredge. Results indicated that dredging activity had little or no influence on downstream water quality.

SWP Pathogen Monitoring Program

In 1986, the EPA established criteria for *Giardia lamblia*, viruses, and the *Legionellae* bacterium in drinking water under its Surface Water Treatment Act. In California, the SWTA is enforced by the Department of Health Services under a more stringent State equivalent SWTA which specifies limits for bacteria (coliform and *Legionellae*) and treatment techniques for the removal and inactivation of *Giardia* and viruses in surface water sources supplying public water systems. Removal of *Cryptosporidium* is not currently addressed by State or federal rules but may be regulated in the future.

Giardia lamblia is the infectious agent of the intestinal disease giardiasis and is endemic to many of California's watersheds. Wild and domestic warm-

blooded animals are potential sources for *Giardia*, *Cryptosporidium*, and enteric viruses that may enter a watershed through insufficiently treated domestic wastewater, urban and farm runoff, and unregulated creek and river inflow. The presence of coliform bacteria (coliform/fecal coliform ratios) indicate the general level of urban and animal contamination of a water supply.

The Department first surveyed for the pathogenic protozoan organisms *Giardia* and *Cryptosporidium* from April 1992 through April 1993 at the request of the State Water Project Sanitary Survey Review Committee. Water samples were also screened for enteric viruses and coliform bacteria. Prior MWD collection efforts detected low but persistent levels of *Giardia*, *Cryptosporidium,* and enteric viruses in the East and West Branches of the California Aqueduct. More recently, outbreaks of *Cryptosporidium*-caused waterborne disease affected 200,000 to 400,000 individuals in Milwaukee, Wisconsin—a similar outbreak in Medford, Oregon, resulted in a "boil water" order. These outbreaks emphasize the importance of investigating the potential pathogenicity of SWP surface water supply deliveries by quantifying existing levels.

Although the SWP does not itself deliver treated water, both the public health threat to the general population and the financial impact to SWP water contractors bearing the cost of pathogen removal may be substantial. Collection sites in the 1992-93 effort included Greene's Landing on the Sacramento River, Banks Pumping Plant and Check 29 on the California Aqueduct, and the Delta-Mendota Canal above O'Neill Pumping Plant at McCabe Road. The results of the 1992-93 survey suggest that the highest level of pathogen activity was associated with Greene's Landing in the Delta. Water supply passing through Banks Pumping Plant was significantly freer of pathogens. *Giardia* levels at the DMC and Check 29 were also low; however, the DMC had the highest detection rate for *Cryptosporidium*. Fewer pathogens in areas farther from the Delta suggests a possible pathogen die-off during transport through the Aqueduct. Bacterial results paralleled pathogen findings. The SWP/Delta pathogen results were approximately six times lower than average national levels.

No sampling was conducted in 1994. However, the 1992-93 results were analyzed and information from that effort improved sampling design, field collection technique, and laboratory analysis. Sampling resumed in 1995 at three locations. Two previously sampled locations included Banks Pumping Plant and the Delta-Mendota Canal at McCabe Road. A new location was added at Arroyo Valle Creek where it enters Lake Del Valle on the South Bay Aqueduct. Although an initial sampling occurred on March 20, 1995, the Department officially began monthly sampling in May. The Arroyo Valle Creek site was not sampled from July to November as no inflow occurred. All *Giardia* and *Cryptosporidium* results were below detection limits, with the exception of one positive finding for *Cryptosporidium* cysts at Banks Pumping Plant in the June sample. Data from the monitoring program is available through the Department's Internet home page (www.water.ca.gov).

Pondweed Abatement in Clifton Court Forebay

During 1995, pumping at the Banks Pumping Plant was repeatedly halted due to build up of pondweed across the Skinner Fish Facility trash rack, especially during high pumping conditions.

Pondweed is composed primarily of Brazilian waterweed (*Egeria densa*), Eurasian milfoil (*Myriophyllum verticulatum*), and coontail (*Ceratophyllum demersum*) that often combine with floating water hyacinth to form dense floating mats. During January 1995, Banks pumping was limited during five separate events due to build up of pondweed on the Skinner Fish Facility trash racks. In one instance, a pumping restriction occurred again only 3 hours after the trash rack was cleaned.

The accumulation of material results in excess debris in the fish-counting tanks and impeded water flow into the Banks Pumping Plant. This can result in an elevation differential between the Forebay and Banks Pumping Plant intake which produces a pump head loss that automatically shuts down the pumps. Exceptional weed removal efforts were required by maintenance crews at the Skinner trash racks to meet pumping schedules at Banks. Intermittent pump shutdowns for trash rack cleanups may also result in

increased pumping cost, since pumping may be deferred from less costly off-peak periods to more costly on-peak times.

During 1994, several different herbicide formulations were sprayed within a four-acre test plot in the southwest lagoon of Clifton Court Forebay to determine the best control method for 1995. Komeen, an aquatic herbicide registered for use in California, was determined the most effective.

Quality Assurance/Quality Control

The Department's water data collection must be of a quality that is 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 the managers of the Department's water data collection programs.

In addition to its basic mission of supporting and strengthening the validity, integrity, and credibility of the Department's water data collection, another important objective of the QA/QC Program is to provide leadership in efficient planning and execution of water data collection activities. In order to minimize cost, it is necessary to carefully plan, implement, interpret, and evaluate data collection activities. Good data collection programs begin with identification of the data collection goal and establishment of the data quality objectives to meet the goal. This planning is done in advance of actual data collection and helps assure that the correct type and amount of data are collected in order to meet the goal. Through this process, the Department can avoid collecting inadequate, irrelevant, or extraneous data, and thereby avoid waste.

Between May 15 and May 18, Delta Field Division staff applied Komeen herbicide to 300 acres of the Clifton Court Forebay. The herbicide was applied from two moving boats through direct subsurface spraying. The boats and technical staff were provided by the Department of Boating and Waterways and Department of Food and Agriculture at no cost to the Department. The treatment is nonpersistent and has no adverse effects to fish or other nontarget organisms. By June 1, 1995, the weeds within the treated area were completely controlled.

The pondweed eradication required a 24-hour stagnation period for maximum effect. The Clifton Court Forebay restricted inflow to control elevation through May 20. The elevation was held to -2.0 feet to expose the pondweed area. During this period, pumping was shut down to prevent dilution and movement of Komeen from the treated area. However, by early July, pondweed began to migrate from unsprayed areas and through the radial gates. Clogging problems at the fish facility modified Banks' pumping operations. Pumping was curtailed July 21 to 28 due to a 1.8-foot differential across the Skinner trash racks. On July 28, the San Luis Field Division's mechanical weed harvester was brought in to remove pondweed from Clifton Court Forebay and the Banks Pumping Plant intake channel. In addition, the Forebay intake water hyacinth screens were replaced in early August.

Clifton Court Forebay was sprayed with herbicides for the second time in 1995 on August 21 and 22. Forebay operations were placed under a special condition to maintain an elevation restriction of a maximum of -1.5 feet and Komeen was applied by helicopter. Operation of Clifton Court Forebay was modified for additional mechanical pondweed harvesting on the Banks Pumping Plant intake channel from September 2 to 7, 1995.

Municipal Water Quality Investigations Program

The Sacramento-San Joaquin Delta is a source of drinking water for about two-thirds 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—the EPA, California Department of Health Services, and California Urban Water Agencies.

Since water quality concerns change rapidly because of new drinking water regulations and water quality concerns, the MWQI program must be flexible enough to adapt to changing requirements. Since the former Delta Health Aspects Monitoring and Delta Island Drainage Investigations programs merged into the MWQI Program in 1990, the program has continued 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 to drinking water quality and water treatment. Through extensive investigations, the program identified agricultural drainage as a major source of natural organic matter that could hinder water treatment to meet drinking water standards.

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, aluminum, iron, and manganese.

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, the Pathogen Partnership. This monitoring program began in fall 1996 and will continue through October 1997; the program evaluates the microbiological status of SWP source waters.

Other components of the MWQI Program include:

- predictive computer models developed to determine the costs of treating water from different Delta locations;
- additional monitoring of newly regulated and potentially regulated chemicals to assess the vulnerability of Delta water supplies to these contaminants; 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 (1) the Delta's ability to meet user needs, (2) the ability to meet stricter State and federal regulations, and (3) 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 continues to perform the majority of the Department's analytical work. At the laboratory, thousands of water samples are analyzed for minerals, nutrients, metals, pesticides and other constituents. New analytical procedures and methods are continually updated and evaluated by the laboratory. After extensive testing and development, these new analytical procedures and methods are added to the list of available services provided by the laboratory. One analytical procedure developed and imple-

mented during fiscal year 1995-96 was the Simulated Distribution System Testing procedure involving formation of trihalomethanes and haloacetic acids. In addition, Bryte Chemical Laboratory implemented quantitative fecal coliform analyses utilizing the Colilert System.

The Master Contract Policy approved by the Department's Director and implemented during fiscal year 1994-95 gave Bryte Chemical Laboratory the responsibility to determine the Department's analytical workload. Prior to this policy, managers of environmental monitoring programs determined whether their analytical work would be done by Bryte Chemical Laboratory or outside contract laboratories. Bryte Chemical Laboratory management now writes and manages master contracts with outside laboratories to provide services to program managers. This policy requires that all prospective contractors undergo rigorous performance evaluations before contracts are awarded. Bryte Chemical Laboratory determines how much of the analytical workload is managed in-house and how much of the work is allocated to contract laboratories.

The Master Contract Policy centralized data flow so that all environmental data are submitted in standard format and reviewed by the Quality Assurance/Quality Control Program to meet specific quality criteria. To augment the QA/QC Program's ability to review incoming environmental data, Bryte Chemical Laboratory has planned the Department-wide Field and Laboratory Information Management System to store, retrieve, and analyze QA/QC and environmental data.

Quality Assurance/Quality Control. The Quality Assurance/Quality Control Program, established in 1992, ensures that data produced by the Department's annual multi-million 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 Guidelines for Analytical Laboratories*;
- *Sampling Manual for Environmental Measurements*;
- *Compilation of Federal and State Drinking Water Standards and Criteria*;
- *Compendium of Water Quality Investigations in the Sacramento-San Joaquin Delta*;
- *Guidelines for Preparing Quality Assurance Project Plans*; and
- *Compilation of Soil and Sediment Standards, Criteria, and Guidelines*.

Several QA/QC technical documents are being 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*.

A recent survey of training requests from employees of the Department indicated a high demand for the course, *Introduction to Quality Assurance/Quality Control in Water Quality Programs*. In response, the QA/QC Program made plans to present this course. Employees of other agencies may attend on a space-available basis.

The QA/QC Program is highly responsive to changes in the Department's operations and needs. With the implementation of the Master Contract Policy, the QA/QC Program assumed a more proactive role to assure that all in-house and contract laboratories providing analytical services for the Department comply with QA/QC procedures, standards, and require-

ments. To fulfill part of this role, 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 an ongoing, up-front QA/QC review process for all incoming environmental data for programs within the Water Quality Assessment Branch of the Division of 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 help other Department programs develop quality assurance project plans; evaluate QA/QC data to determine the accuracy and precision of environmental data generated for the program; and test and evaluate the performance of environmental monitoring equipment. Ongoing assistance is provided to all the Department's environmental monitoring programs, including those within the Division of Local Assistance, Division of Operations and Maintenance, Environmental Services Office, and the Interagency Ecological Program.

Finally, the QA/QC Program also conducts research and development of new methods and procedures used by analytical laboratories and evaluates new types of field equipment used 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 concentrations in samples obtained by autosamplers, an on-line real-time total organic carbon autoanalyzer, and fecal coliform analyses using a chromogenic substrate test system.

Suisun Marsh Activities

Suisun Marsh is about 59,000 acres of tidal and managed brackish water wetlands and 30,000 acres of bays and sloughs. It is the largest contiguous estuarine marsh remaining in the United States. Situated in southern Solano County, west of the Sacramento-San Joaquin Delta and north of Suisun Bay, the marsh encompasses more than 10 percent of California's remaining natural wetlands. In addition, the marsh is the resting and feeding ground for thousands of waterfowl migrating on the Pacific Flyway.

Since the early 1970s, the Department, the California Legislature, the SWRCB, USBR, and other agencies have acted to preserve Suisun Marsh as a unique environmental resource. As part of its responsibility for protecting Suisun Marsh, the SWRCB included water quality standards for the marsh in Water Right Decision 1485 and Order 95-6 (amending D-1485), which applies to SWP and CVP operations. In 1987, the Department, USBR, DFG, and the Suisun Resource Conservation District signed the *Suisun Marsh Preservation Agreement*. The *Preservation Agreement* contains provisions for actions to control channel water and soil salinity to enable the Department and USBR to comply with the SWRCB standards and terms.

Suisun Marsh Expenditure History

From 1968 through June 1996, the Department disbursed over $75 million for planning, design, environmental documentation, construction, maintenance, monitoring, and permit compliance in support of implementing the *Plan of Protection for the Suisun Marsh* and the *Suisun Marsh Preservation Agreement*, to meet standards set by the SWRCB. USBR has reimbursed the Department about $38.1 million (50.8 percent), and the California General Fund has reimbursed about $9.5 million (12.6 percent). (Please note that these figures do not include

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

The *Plan of Protection* suggests six phases to provide protection for the Suisun Marsh. Phase I (Initial Facilities) and Phase II (Suisun Marsh Salinity Control Gates) are complete. Phases III and IV, directed at the western Suisun Marsh, have been combined and are 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.

At the USBR's request, the SWRCB reset the timetable for complying 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.

up-front payments made by USBR for staff and other direct costs.) Suisun Marsh expenditures and reimbursements administered by the Department for calendar years 1968 through June 1996 are summarized in Table 6-2.

SWRCB Standards for Suisun Marsh

Salinity standards are set by the SWRCB and included in the *Suisun Marsh Preservation Agreement* to provide optimum source water for the production of plant foods for waterfowl and to help preserve Suisun Marsh as a brackish tidal marsh. In June 1995, the SWRCB adopted Order 95-6 (amending D-1485) to be consistent with its *1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (May 1995). The amended standards are consistent with Suisun Marsh standards contained in the 1995 Bay-Delta Plan adopted on May 22, 1995.

The Department and USBR staff attended the SWRCB Water Right Hearing on April 18 and 19, 1995, held in response to the agencies' request to amend D-1485. Staff presented testimony to the SWRCB on April 18 on Department and USBR Suisun Marsh activities; plan of action through 1997; and concerns raised by fish and wildlife agencies and water users about the appropriateness of western Suisun Marsh channel water salinity standards. Others presenting testimony or policy statements on Suisun Marsh standards included DFG, Joint Water Users, and California Sportsfishing Protection Alliance.

With Order 95-6, the SWRCB made the following changes in Suisun Marsh standards regarding D-1485:

- The Chipps Island 28-day running average salinity standard is no longer in effect.
- D-1485 channel water salinity standards are in effect from October 1995 at the three eastern Suisun Marsh compliance stations: Sacramento River at Collinsville (C-2), Montezuma Slough at National Steel (S-64), and Montezuma Slough near Beldons Landing (S-49).
- *Suisun Marsh Preservation Agreement* channel water salinity standards (both normal and deficiency) are already in effect (or will be) at the four western Suisun Marsh compliance locations: Chadbourne Slough at Sunrise Club (S-21) from October 1995; Suisun Slough at Volanti (S-42), Cordelia Slough at Ibis Club (S-97), and

Table 6-2
Suisun Marsh Expenditures and Reimbursements, as of June 30, 1996
(in Dollars)

Calendar Year	Departmental Upfront Payment	USBR Reimbursement	General Fund Reimbursement	Cumulative Departmental Expenditure Balance (CXB) (a
1968	10,571	0	0	10,571
1969	34,182	0	0	44,753
1970	23,343	0	0	68,096
1971	1,042	0	0	69,138
1972	47	0	0	69,185
1973	0	0	0	69,185
1974	0	0	0	69,185
1975	2,709	0	0	71,894
1976	32,961	0	0	104,855
1977	37,475	0	0	142,331
1978	350,831	0	0	493,162
1979	3,660,096	0	0	4,153,258
1980	5,005,759	0	0	9,159,017
1981	2,964,977	0	0	12,123,995
1982	2,955,702	2,500,000	0	12,579,697
1983	2,754,091	0	0	15,333,788
1984	2,418,345	0	0	17,752,133
1985	2,332,776	0	0	20,084,909
1986	6,495,323	0	0	26,580,232
1987	13,600,701	0	0	40,180,933
1988	7,456,139	22,480,556	9,478,000 (b	15,678,516
1989	2,342,274	4,670,266	0	13,350,524
1990	3,030,118	695,450	0	15,685,192
1991	6,223,473	2,925,429	0	18,983,236
1992	2,737,532	1,174,655	0	20,546,113
1993	2,978,287	238,130	0	23,286,270
1994	3,193,187	1,962,549	0	24,516,909
1995	2,725,012	647,138	0	26,594,783
1996	1,689,488	829,026	0	27,455,245
Total	**75,056,444 (c**	**38,123,199 (c (d**	**9,478,000 (e**	**27,455,245 (f**

a) CXB = (Previous year's CXB + departmental upfront payment) - (USBR + general fund reimbursements).
b) Under State Assembly Bill 1442, the General Fund paid 20% of departmental upfront payment through June 1988, amounting to $9,478,000.
c) Does not include upfront payments by USBR for staff and other direct costs.
d) USBR paid 50.8% of total departmental upfront payment.
e) General Fund paid 12.6% of total departmental upfront payment.
f) The Department paid 36.6% of total departmental upfront payment.

Goodyear Slough at Morrow Island (S-35) from October 1997.
- A narrative salinity standard is added for the brackish tidal marshes of Suisun Bay.
- Water year classifications and deficiency periods are determined using the Sacramento Valley 40-30-30 Index.

Suisun Marsh Preservation Agreement

The *Suisun Marsh Preservation Agreement*, like Decision 1485, includes specific salinity compliance standards for marsh channels, However, the SMPA links the times for subsequent compliance to the date the Suisun Marsh Salinity Control Gates were considered operational (November 22, 1989). The compliance options for Decision 1485, as revised, are not linked to completion of facilities. Also, the SMPA includes provisions for higher salinity levels during periods when California experiences a series of adverse hydrologic conditions.

In a petition dated August 30, 1988, the Department, U.S. Bureau of Reclamation, Department of Fish and Game, and Suisun Resource Conservation District requested the State Water Resources Control Board to adopt the SMPA as the means to provide protection for the Suisun Marsh. This action would have modified SWP and CVP water rights. Because new species of concern were identified in the marsh, the SWRCB requested and updated biological assessment to determine the impacts of adopting the SMPA. A study plan for a biological assessment was sent to the SWRCB on March 2, 1992. The biological assessment was scheduled to be completed and submitted to the SWRCB in 1996.

Water Quality Monitoring and Compliance

The Department's Environmental Services Office staff conducted D-1485 compliance monitoring at several stations within Suisun Marsh and vicinity during 1995. (See Figure 6-2.) All Suisun Marsh channel water salinity standards were met in the 1995 control season (October through May).

During the 1995 control season, salinity standards were in effect at the following locations:

- two locations in Montezuma Slough (S-49 Beldons Landing and S-64 National Steel);
- two locations in the Sacramento River (C-2 Sacramento River at Collinsville and Mallard Slough);
- two locations in the northwestern Suisun Marsh (S-21 Chadbourne Slough at Sunrise Club and S-97 Cordelia Slough at Ibis);
- one location in the southwestern Suisun Marsh (S-75 Goodyear Slough, monitored at S-35); and
- Chipps Island.

However, as part of the 1994 to 1995 Western Suisun Marsh Salinity Control Test, SWRCB Resolution Number 94-90 granted a variance to compliance at the western marsh stations S-21, S-97, and S-75.

The high outflow conditions in the Delta during winter and spring 1995 combined with localized tributary runoff into Suisun Marsh resulted in lower salinities and, therefore, low specific conductance measurements.

In September 1995, the Department discontinued the on-site monitoring program (managed wetland pond stage and soil tubes) on individual club ownerships. This program was conducted for 12 years, 7 years longer than required in the *Suisun Marsh Monitoring Agreement*. Currently, the Department, DFG, and Suisun Resource Conservation District staff are evaluating the data collected and will recommend if any additional on-site monitoring is needed.

Suisun Ecological Workgroup

At the request of the SWRCB in the 1995 Water Quality Control Plan and Order 95-6, the Department convened the Suisun Ecological Workgroup. 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 the SWRCB regarding current and future water quality objectives.

SEW consists of representatives from the Department, DFG, USFWS, NMFS, USBR, EPA, San Francisco Bay Regional Water Quality Control Board, San Francisco Bay Conservation and Development Commission, California Native Plant Society, Suisun Resource Conservation District, Ducks Unlimited, California Waterfowl Association, San Francisco Estuary Institute, MWD, and others.

In 1995, the group met monthly from May through August, as well as in October and December. In

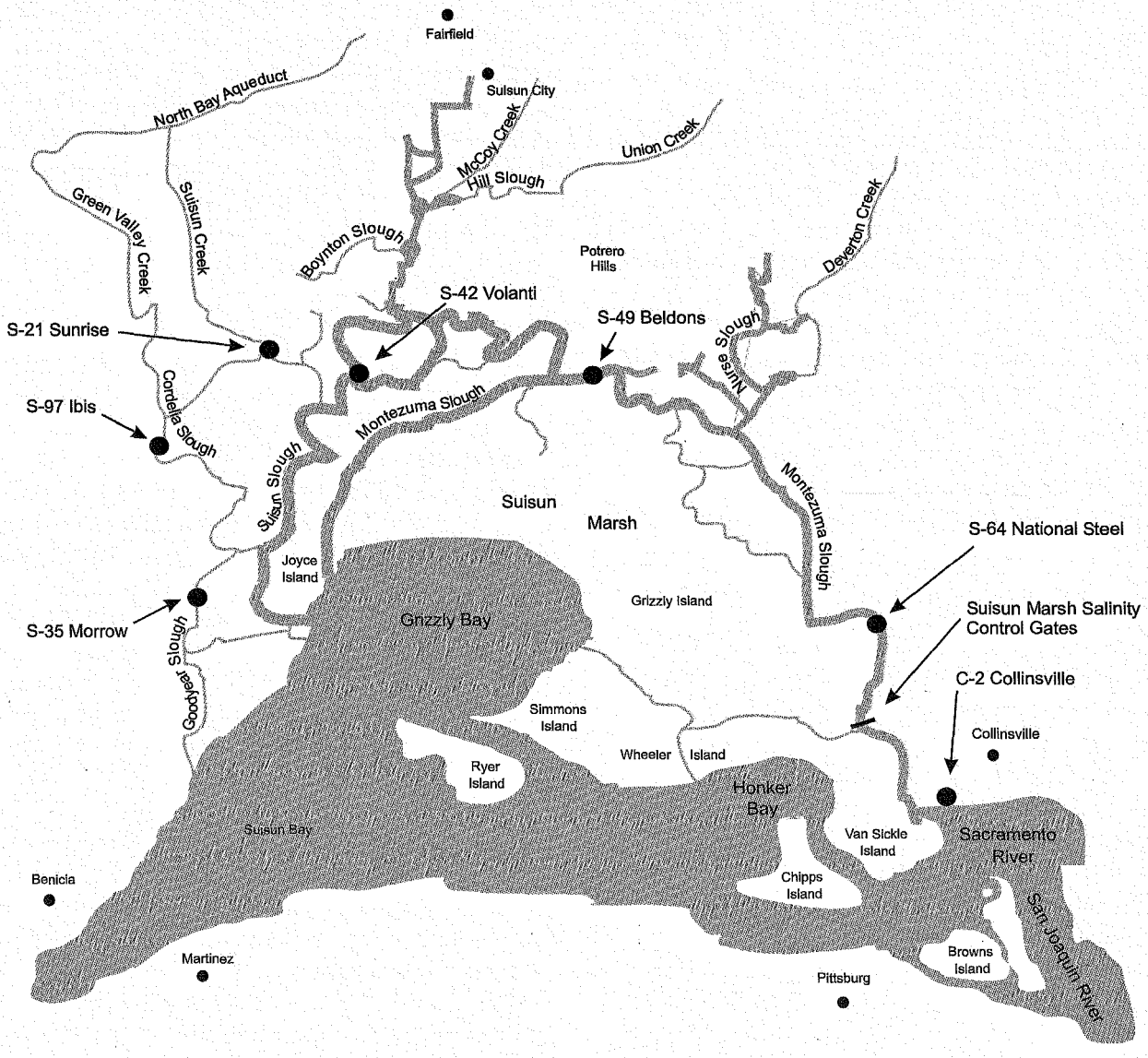


Figure 6-2
Water Quality Compliance Monitoring Stations in the Suisun Marsh

October, five technical subcommittees were formed to focus on the following areas: brackish marsh vegetation, waterfowl habitat, wetland wildlife (other than waterfowl), aquatic organisms, habitat and hydrodynamics, and water quality and effects of urbanization.

During fall 1995, SEW began the task of evaluating and recommending salinity objectives. From a list of nine general objectives advanced by the SWRCB, the Department identified six goals for SEW to facilitate this process:

- evaluate the effects of existing western Suisun Marsh standards on beneficial uses;
- determine and recommend appropriate resource-specific standards;
- characterize target brackish water ecosystem for Suisun Marsh;
- assess the impact of implementing appropriate resource-specific standards on other resources and develop appropriate multi-resource (ecosystem) water quality standards;
- recommend future studies and compliance monitoring programs; and
- recommend narrative standards for tidal wetlands.

The first three goals will be accomplished in technical subcommittees and the final three goals will be accomplished by SEW, as a whole, or by a group of representatives from each subcommittee.

Western Suisun Marsh Salinity Control Project

In April 1995, USBR and the Department stopped work on the draft EIR/EIS for the WSCP. The Western Suisun Marsh Salinity Control Project was initiated by the Department and USBR in 1990 to implement Phases III and IV of the *Plan of Protection*. However, the agencies decided that it is unlikely that additional large-scale facilities will be necessary for salinity control in the Suisun Marsh with the release of the draft WQCP (December 1994) and the Department's estimate of resulting salinity conditions in the Suisun Marsh as presented in the report *Estimate of Salinity Changes in Suisun Marsh for Water Years 1987-92 with CUWA/AG Criteria.*

Amending the Suisun Marsh Preservation Agreement

In 1986, federal legislation (Public Law 99-546) authorized funds to the USBR to protect Suisun Marsh. On March 2, 1987, the Department, USBR, DFG, and the SRCD signed the *Suisun Marsh Preservation Agreement.*

The SMPA ensures that channel water salinity in Suisun Marsh will be maintained as prescribed to mitigate for adverse effects of the CVP and SWP on managed wetlands in Suisun Marsh, as well as effects from other upstream diversions. An important feature of the agreement is the Suisun Marsh Salinity Control Gates facility, declared operational on November 22, 1989 (about 1 year after initial operation).

On August 4, 1995, the Suisun Marsh Coordinators representing the four agencies party to the SMPA began discussions directed at updating the agreement, pursuant to SMPA Articles 4 and 17. Beginning September 1995, the SMPA Negotiation Team met monthly in Sacramento and made significant progress in developing the basis to amend the agreement. The negotiation team is comprised of representatives from USBR, the Department, DFG, and the SRCD. Representatives from the SWP and CVP contractors have actively participated in the negotiations. Updating the 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.

The negotiation team established a technical support group in September 1995 to provide data analysis, model studies, and technical input. In January 1996, the negotiation team requested that the technical group identify alternative actions needed to meet the objectives of the SMPA in the western Suisun Marsh. The technical group prepared a decision matrix of 18 actions; 11 were considered feasible. The negotiation team advanced the 11 feasible actions to the SWRCB for inclusion in the EIR for implementing the 1995 Water Quality Control Plan.

From February through May 1996, the negotiation team actively discussed several possible combinations of actions. In June 1996, the Department and

USBR proposed 10 joint actions that they believe meet the objectives of the SMPA. The actions focus on decreasing soil water salinity on Suisun Marsh managed wetlands, especially in the western half. On July 16, the negotiation team agreed in principle on 10 joint actions, and established a committee to draft details and amendment language.

Fisheries Monitoring for the Western Suisun Marsh Salinity Control Test

From September 1 through November 14, 1994, the Department released about 4,130 acre-feet of water from North Bay Aqueduct into Cordelia Slough south of Interstate 80 via an unlined ditch in the city of Fairfield. Adult fall-run salmon were observed in the ditch on October 25, 1994. On November 14, 1994, DFG and Department biologists conservatively estimated that 80 adult fall-run chinook salmon were present in the ditch. As a result of observing the fall-run chinook salmon and concerns that NBA water released into the northwestern Suisun Marsh would attract endangered winter-run salmon, the Department and USBR reinitiated informal consultation with USFWS, NMFS, and DFG for the remainder of the flow test.

To continue the test, the regulatory agencies required the Department and USBR to develop and implement a fisheries monitoring program to establish the presence and abundance of winter-run chinook salmon, steelhead trout, splittail, delta smelt, longfin smelt, and tidewater goby. The Department monitored for winter-run chinook salmon, steelhead trout, and splittail from February through May 1995 and for delta smelt and longfin smelt from December 1994 through May 1995.

While no winter-run chinook salmon, splittail, delta smelt or longfin smelt were captured, the presence of fall-run chinook salmon and rainbow trout, possibly steelhead, were documented. An additional 14 fish species were also found during the sampling. Complete results and analysis from the fisheries monitoring will be presented in a 1996 report detailing water quality, hydrodynamic, and biological effects of the 1994-1995 Western Suisun Marsh Salinity Control Test.

Another survey was conducted to determine if suitable tidewater goby habitat was present in Green Valley Creek. Because of the configuration of the creek bed and the extreme fluctuations in the tidal elevation, no suitable habitat was found. Consequently, no sampling for tidewater gobies was required.

Adult Salmon Migration Study

An adult salmon migration study was conducted in 1993 and 1994 to fulfill a Corps permit requirement for the Suisun Marsh Salinity Control Gates. The permit was issued for the construction and operation of the SMSCG.

A pilot study was conducted in fall 1993; DFG prepared a final report in February 1996. The findings from the 1993 pilot study indicate a statistically significant difference in passage times among fish when the flashboards were out and the gates were held open versus when the flashboards were in, regardless of gate operation.

The 1994 Adult Salmon Migration Study was conducted from September 26 through November 9, 1994. The 1994 study goal was to estimate the rates and patterns of adult fall-run chinook salmon passage through the SMSCG under three SMSCG configurations: (1) flashboards in and gates operating; (2) flashboards in and gates held open; and (3) flashboards out and gates held open.

Department personnel captured adult salmon with gill nets and inserted sonic tags into their stomachs. Movement of each tagged salmon was tracked by stationary and mobile hydrophones and receivers. DFG distributed the final 1994 study report in July 1996.

Suisun Marsh Salinity Control Gate Operation

If needed, the SMSCG are operated from September 1 to May 31. Gate operation and installation or removal of the flashboards varied due to: existing salinity conditions, fisheries agencies' requests for sensitive species concerns, and for special studies. To minimize fishery concerns related to predation and impeded migration of fish, gates are operated only to meet standards.

Because of exceptionally high Delta outflows during winter 1995, the radial gates were raised and remained open beginning January 11, 1995. On February 8, 1995, the flashboards were removed. Because of the continued low salinity in the marsh, SMSCG operation was not needed to meet standards for the remainder of the control season. Again due to low salinity conditions, there was no need to install the flashboards in October 1995 (for the 1995-96 control season) or to operate the SMSCG for the remainder of 1995.

Lower Joice Island Water Intake Fish Screen

During 1995, the Department's ESO staff prepared a preliminary design for fish screens for the Lower Joice Island intake and began planning installation. The Department and USBR are also evaluating an alternative fish screen design prepared by the Suisun Resource Conservation District. The fish screen installation will be a coordinated effort between the Department, USBR, DFG, and SRCD and will be included in the Suisun Marsh Diversion Screening Program. The Department and USBR decided to evaluate the five fish screens that SRCD plans to install during summer 1996 before selecting the fish screen design for Lower Joice Island; a design will be selected in January 1997 for installation during summer 1997.

Dredge Spoil Site No. 2 Survey

Prior to installation of the SMSCG in Montezuma Slough, about 70,000 cubic yards of material were excavated and placed at Dredge Spoil Site No. 2 on Van Sickle Island. Placement of this material on Van Sickle Island was authorized by permits issued to the Department by the San Francisco Bay Conservation and Development Commission and the Corps for constructing the SMSCG. The dredge disposal was completed by October 1988. One permit condition requires an annual plant survey to be conducted at the spoil site for three growing seasons after the dredge disposal to help determine the extent of reestablished salt marsh harvest mouse habitat.

DFG and Department biologists conducted the second vegetation survey and second trapping effort for the salt marsh harvest mouse in September 1995. A final report on the first 2 years of monitoring is scheduled to be released in 1996.

The Department contracted with DFG to assist in the Van Sickle Island monitoring activities. DFG prepared a monitoring plan titled, *Monitoring Plan to Evaluate Habitat Recovery for the Salt Marsh Harvest Mouse at the Montezuma Slough Dredge Disposal Site on Van Sickle Island.*

Initial Facilities Maintenance

Initial facilities listed in the 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* 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 1995.

Morrow Island Distribution System. The MIDS was constructed in 1980 as one of the initial facilities. The distribution system consists of two ditches, M-line and C-line, which connect Goodyear Slough directly to Suisun Slough and Grizzly Bay. The distribution system allows less saline water from Goodyear Slough to be tidally pumped, as needed, to flood the eastern side of Morrow Island. During the waterfowl season and throughout the leach cycles, some owners of adjacent managed wetlands drain their ponds into the distribution system, which directs the higher salinity leachates into Grizzly Bay rather than Goodyear Slough.

In 1995, Department staff continued planning for required maintenance and submitted a permit application to the San Francisco Bay District of the Corps to authorize the proposed maintenance under Section 404 of the Clean Water Act. The Department also submitted a request to amend an existing permit to SFBC/DC to authorize the proposed maintenance. Department and DFG staff are developing a mitigation plan. Department and USBR staff began consultation with USFWS under Section 7 of the Endangered Species Act.

Pending appropriate permits, the C-line outfall pipe will likely be replaced in September 1996; MIDS

maintenance dredging will likely begin in 1997. After the material dries (approximately 1 year) and is reshaped, the levees will be rebuilt and the roadways resurfaced with gravel.

Roaring River Distribution System. The RRDS was completed and became operational in 1980 as one of the initial facilities outlined in the *Plan of Protection for the Suisun Marsh.* Fish screens were installed and their effectiveness tested on two intake culverts in 1980. Fish screens were installed on the remaining six culverts in 1983. The screens at the Roaring River intakes were originally designed with an average approach velocity of 0.5 feet per second. (Design approach velocity is the design flow divided by the screen area.)

The December 15, 1994, delta smelt biological opinion issued by USFWS specified a maximum approach velocity of 0.2 fps. Department staff have concluded that an approach velocity of 0.2 fps can be achieved by partially opening the eight intake pipes and are developing protocol to operate the facility at the 0.2 fps maximum approach velocity criteria. The Department is evaluating the feasibility of automating the Roaring River intake slide gates to provide real-time operation with changing water demand and tidal conditions. SRCD and DFG are concerned that there will not be enough water available to fill managed wetlands under this scenario, especially during initial fill in the fall.

In 1994, SRCD indicated that 19 of the 26 turnout pipes from the RRDS onto privately-owned managed wetlands had failed because of design errors that resulted in uplifting at the ends of the culvert from buoyancy forces. The Department's Civil Design Branch completed an investigation and presented their analysis and results in a memorandum distributed in early January 1996. They concluded that the uplift is a maintenance issue caused by levee settlement prevalent in Suisun Marsh.

Suisun Marsh Annual Data Summary Report. Data collected and analyzed in the Suisun Marsh during water year 1993 were reported in the *Suisun Marsh Monitoring Program Data Summary,* published in August 1995. In this annual report, the Department presented results of studies and surveys in water year 1993 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. Scheduled maintenance for mitigation facilities maintained by the Department, as well as monitoring program revisions, are also discussed in this report.

Results for water year 1994 will be available in summer 1996. The report for water year 1995 will be completed after the water year 1994 report is released.

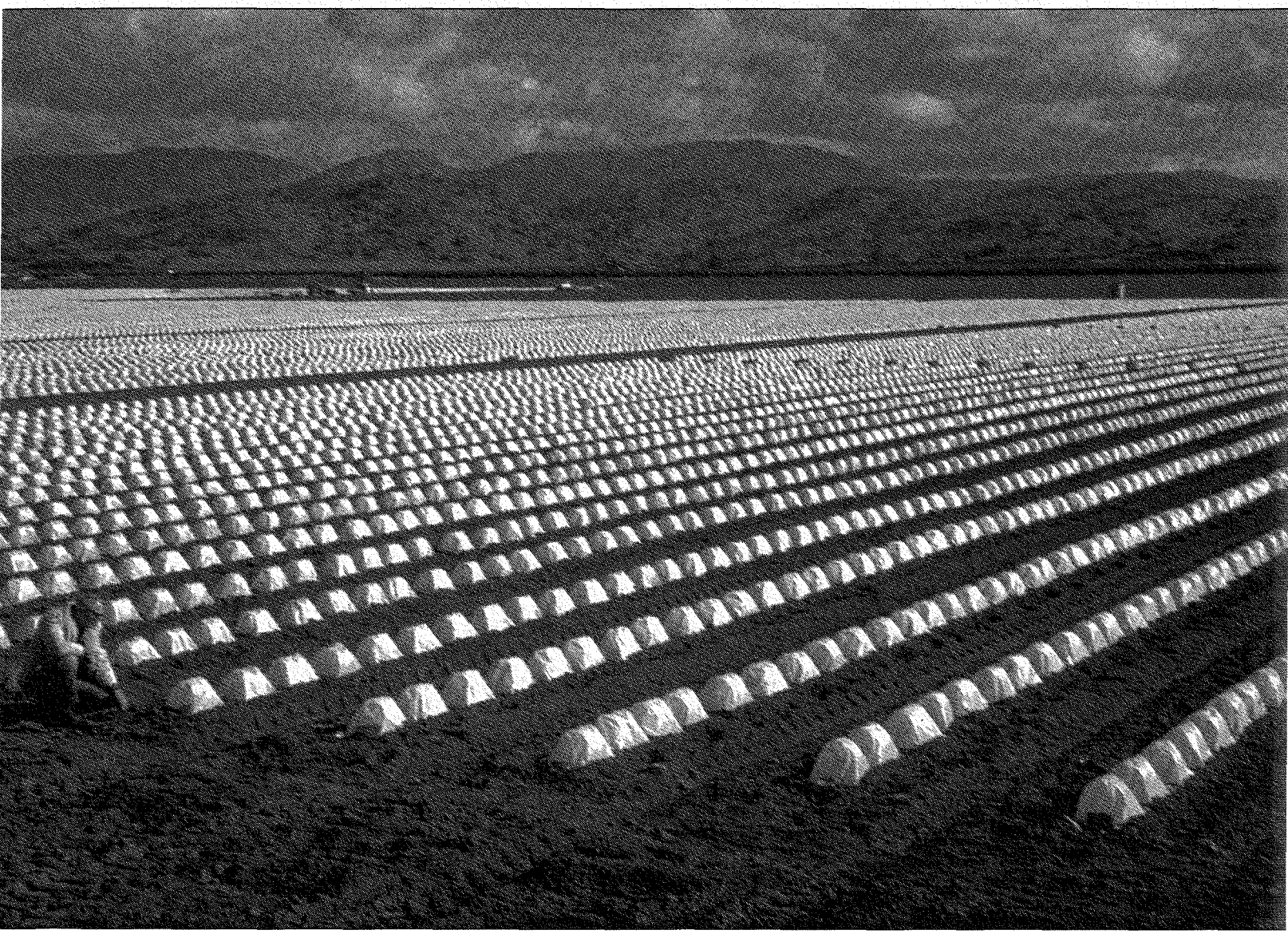
Comprehensive Suisun Marsh Data Review. The Department, DFG, and SRCD staff began working on a *Comprehensive Suisun Marsh Data Review.* The objective of the comprehensive data review is to evaluate all the data collected on monitored ownerships, water quality, fisheries data, and management practices in the Suisun Marsh since the program was established in 1987. An outline and timeline have been developed and approved. Water quality and vegetation data collected from the monitored ownerships have been reviewed. A draft report is scheduled for release in 1997.

Suisun Marsh Technical Advisory Committee. During 1995, Department staff facilitated four Suisun Marsh technical advisory committee meetings. Meetings are now scheduled quarterly to increase staff time and resource efficiency. These meetings were attended by representatives from federal, State, and local agencies and Suisun Marsh landowners. Meeting notes were distributed to more than 60 people including SWRCB staff.

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

Chapter 7

Local Assistance Programs



Strawberry plants growing under individual greenhouses in the Salinas Valley

Significant Events

- Department staff completed the draft report titled, *Drainage Management Status in the San Joaquin Valley*; a final version is scheduled for release in 1997, after final review.
- The Department and the U.S. Geological Survey completed cooperative studies on the occurrence, movement, and fate of selenium in the Tulare Basin area.
- Department staff completed a report titled, *Summary Report: Results of Eight Demonstration & Study Projects in the San Joaquin Valley to Reduce Agricultural Drainage.*
- 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 while actually reducing the distribution cost. The cost savings realized have been used to increase the quality of the report.
- Under the Davis-Grunsky Act program, the recreational facilities associated with the Littlerock Dam Repair Project were completed in fiscal year 1995-96 and the deadline for construction was extended to June 30, 1997, to allow for monitoring of the survival of project-required vegetation. The site inspection and audit are expected to be completed in the third quarter of fiscal year 1997-98. All facilities have been completed for the Home Gardens County Water District Project, San Bernardino County. The audit is scheduled for completion in the third quarter of fiscal year 1996-97.
- A 5-year agricultural drainage program plan was completed and approved—the new plan reviewed the accomplishments of the drainage program since 1989 and set new objectives for the remainder of the century.

Through the Division of Local Assistance, the Department of Water Resources participates in several programs to assist local agencies and benefit State Water Project contractors.

One program, the Davis-Grunsky Act program, provides financial assistance to local agencies for constructing water supply projects. Under this program, the State provides public agencies with grants or loans with a fixed interest rate and repayment period.

Another program, the San Joaquin Valley Drainage Program, addresses drainage problems related to irrigated farmlands. The Department works with many agencies to solve or mitigate the effects of drainage problems that affect the service areas of SWP contractors.

Two additional programs managed by the Division of Local Assistance are the Site Assessment and the Review of Reports programs. Both programs are designed to protect the SWP and the interests of long-term contractors.

Davis-Grunsky Act

Public agencies have received loans and grants through the Davis-Grunsky Act since 1959. Jointly administered by the Department and the California Water Commission, the Act was designed as complementary legislation to the Burns-Porter Act, which was enacted to help finance construction of the SWP.

Of the original $1.75 billion available through the Burns-Porter Act, $130 million was reserved specifically for distribution through provisions of the Davis-Grunsky Act. Essentially all $130 million had been disbursed or committed through fiscal year 1995-96 for loans, grants, and administrative costs. Monies are paid from the California Water Resources Development Fund and the California Water Fund. Loans are repaid to the California Water Resources Development Fund.

Basic Provisions

The broad objective of the Davis-Grunsky Act is to advance the development, control, and conservation of water resources in California. To meet this objective, the Act:

- provides loans to public agencies to prepare feasibility reports and construct local water projects if an agency cannot obtain financing on reasonable terms from other sources;
- provides grants to encourage the enhancement of fish and wildlife habitat and the development of the recreational aspects of local water projects; and
- enables the State of California to participate as a partner in the development, construction, or operation of certain water projects if participation is necessary for optimum development of the resources.

Public agencies, including cities, counties, districts, or other political subdivisions of the State, may participate in the program. Types of assistance available include:

- loans for constructing local water projects, acquiring sites for reservoirs for proposed water projects, and preparing feasibility reports on projects for which loans have been requested;
- grants for paying the part of the construction cost of dams and reservoirs that is properly allocated for providing recreation, enhancing fish and wildlife, and constructing initial water supply and sanitary facilities needed for public recreational use of reservoirs; and
- State participation as a partner in a project larger than one that the local agency proposed to construct on its own.

At the program's inception, loans were made at the current market interest rate. In 1967, to be more equitable to the low-income agencies that the program was designed to assist, the legislature fixed the interest rate at 2.5 percent. The maximum loan repayment period was set at 50 years. At the Department's dis-

cretion 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.

Current Activities

The Davis-Grunsky Act program for fiscal year 1995-1996 funded the following agencies' 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 remain available to the District.

Home County Gardens District. This San Bernardino County agency has received its entire loan entitlement. The district received an extension to complete the final project component, which will ensure compliance with water quality standards imposed by the county. The project audit is expected to occur in the third quarter of fiscal year 1996-97.

Littlerock Creek Irrigation District/Palmdale Water District. The Department has disbursed $2.7 million of the $3 million grant approved for repair of this project in Los Angeles County. The recreational facilities associated with this project are complete. The Department approved extension of the construction completion date to June 30, 1997, to monitor the success rate of project-required revegetation. Project audit and subsequent release of the remaining $300,000 withheld is expected in the fourth quarter of 1996.

Agricultural Drainage Program

The Department continues to participate in the multi-agency San Joaquin Valley Drainage Implementation Program to implement their 1990 recommended plan. The plan recommends a number of in-valley drainage management measures to help solve drainage problems. The SJVDIP mission is to coordinate interagency programs to help the local districts and farmers implement the recommendations. A draft report titled, *Drainage Management Status in the San Joaquin Valley* was completed and a final report will be published in 1997 after final review. The report describes progress made in implementing the 1990 recommendations, resolving issues, and finding solutions to deal with salt accumulation in the San Joaquin Valley.

In 1989, the Department prepared a 5-year plan for its drainage program that set objectives for each of the four principal activities (drainage monitoring and evaluation, drainage reduction, drainage treatment, and evaporation ponds investigation). A new 5-year plan was completed and approved that reviewed the accomplishments of the program since 1989 and set new objectives for the remainder of the century.

The Department participates in a multi-agency feasibility study of water reclamation and reuse in the San Francisco Bay area. One of the options being reviewed is the export of reclaimed water to the San Joaquin Valley in return for the export of excess salt resulting from transfer to the Pacific Ocean. Phase I of the study is complete. Phase II, including evaluation of the water impacts of salt discharge, is to be completed during 1997.

Drainage Monitoring and Evaluation

The U.S. Geological Survey and the Department completed their cooperative studies on the occurrence, movement, and fate of selenium in the Tulare Basin area. The final report has been received and evaluated.

The Department is participating in a cooperative program with U.S. Bureau of Reclamation to install real-time monitoring equipment on the San Joaquin River. The equipment will provide local, State, and federal agencies with real-time data to assist in managing drainage releases to the San Joaquin River.

The Department continues to monitor shallow groundwater levels and has begun preparation of electrical conductivity maps for the San Joaquin Valley. In 1995, a shallow monitoring well network was selected for the southern San Joaquin Valley and

electrical conductivity data was gathered. An EC contour map of high groundwater areas will be completed for the southern portions of the Central Valley in 1996.

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 a report titled *Summary Report: Results of Eight Demonstration & Study Projects in the San Joaquin Valley to Reduce Agricultural Drainage.* This report gives an overview, results, conclusions, and recommendations on each completed drainage reduction and reuse demonstration project. The Department also prepared the following reports:

- *Linear/Lateral Sprinkler Survey* (Draft Final Report);
- *Demonstration of Irrigation Scheduling and Field Moisture Monitoring Techniques in Kern County* (Final Report); and
- *Shallow Groundwater Management* (Draft Final Report).

During the 1994-95 fiscal year, the Department began a number of new projects. These projects consist of:

- a study of plant growth as a function of varying salinity and boron levels;
- a project to study boron accumulation and toxicity in agroforestry;
- a project to study irrigation and drainage management on cracking soils; and
- a project on volatilization of selenium from drainage water.

In addition, the agricultural drainage reduction and reuse program is completing a Request for Proposal to study and demonstrate new irrigation management practices in different geohydrological areas of the State, particularly the SWP area. The new activities will include on-farm source control, water reuse, economic incentives, management of shallow groundwater, and training and education.

Drainage Treatment

The Department continues to participate in the multiagency drainage treatment test facility near Tranquillity in western Fresno County. The principal activity is a bacterial selenium reduction/removal test program that achieved selenium removal rates of up to 90 percent in a 1994 pilot-scale operation. Processes tested are upflow anaerobic sludge blanket reactors, fluidized bed reactors, and a packed bed reactor. Slow sand filtration is being evaluated as a final polishing process. During 1995, tests concentrated on perfecting the process and developing operational and economic feasibility data. Additional studies of alternative carbon sources, as well as identification and characterization of process wastes, are of primary concern.

Evaporation Ponds

Operators of the agricultural evaporation ponds began implementation of the waste discharge requirements as adopted by the Central Valley Regional Water Quality Control Board in August 1994. Clean wetlands provided compensation for operation of the evaporation ponds; pond management for some systems changed; and structural modifications began at many evaporation ponds. Most of these mitigation procedures were developed by researchers funded through the Evaporation Pond Investigation.

Several interested parties filed petitions to the SWRCB to strengthen the waste discharge requirements of the regional board. SWRCB held hearings on these petitions and expects to make a decision before the end of the 1995 calendar year. In June 1995, SWRCB adopted a settlement agreement between Westlake Farms and most of the petitioners based on a set of protocols developed by USFWS. Six other pond operators reached agreement with USFWS, but not the other petitioners. These six operators can potentially reach an agreement acceptable to the other petitioners before the SWRCB decision, but the remaining operators will probably not reach an agreement.

The Department continues to fund and coordinate research on the evaporation ponds. This past year, research activity was minimal due to budgetary considerations. The National Biological Service study

funded by the Department is in the analysis stage, with the final report due in 1996. Data are being collected by consultants to the operators as part of their waste discharge requirements and will be available for analysis, but comprehensive work has been postponed until funding is available.

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

The Department began cooperative studies this year to assess invertebrate productivity within the wetlands and other related habitats to make further use of the demonstration project. USFWS and the NBS are also conducting related studies to assess the total productivity of demonstration wetlands in relation to other wetland habitats.

Review of Environmental Impact Documents

The Review of Reports section in Division of Local Assistance screens State Clearinghouse documents and circulates SWP-related materials for review by staff of the four districts and the divisions of Planning, Operations and Maintenance, and Engineering, as appropriate. In addition, other divisions and offices are notified of activities and 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 Review of Reports 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. In 1995, about 2,860 were screened by the Review of Reports section with a total of 92 referred for detailed review. The Division of Operations and Maintenance received 47 of these referrals.

Of the documents submitted for formal review, about 10 percent generated written comments submitted to the lead agency through the State Clearinghouse. These comments included 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 Review of Reports. The number of referrals for formal review and comment has remained at approximately the same level from 1994 to 1995.

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 while actually reducing the distribution cost. The cost savings realized have been used to increase the quality of the report.

The Review of Reports section tracks documents, such as the *Delta Wetlands Draft Environmental Impact Report*, which are of major interest to the Department. Review of Reports staff coordinated development of a document that listed review status and contact information for over 20 Department staff, and supplied it to all reviewers. The staff also coordinated supply of review documents for all involved in the review.

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

Chapter 8

Legislation and Litigation

Southwest view of the State Capitol

Significant Events

- In May 1996, the California Superior Court ruled in the lawsuit filed by the Planning and Conservation League and other parties challenging the Monterey Agreement. The court ruled that although the Department should have served as lead agency for the Environmental Impact Report, *Implementation of the Monterey Agreement*, this was a harmless error that did not warrant revision of the EIR. The court granted summary adjudication on the cause of action relating to the transfers of Kern Water Bank in favor of the Department.

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 901 (Costa) (Chapter 881, Statutes of 1995) Water Availability and Land Use

This law requires that information about domestic water supply and demand be referenced in local general plan updates. In addition, property developments requiring an environmental impact report are required to identify domestic water supplies for the proposed project.

SB 1011 (Polanco) (Chapter 854, Statutes of 1995) Urban Water Management Plans

This law requires a revision of the content of the urban water management plans submitted by water suppliers to the Department every 5 years, in years ending in "5" and "0," including a water supply and demand assessment of the reliability of water service to customers. The Department is required to report the status of the urban water management plans to the Legislature by December 31 in years ending in "6" and "1."

Litigation

As of June 30, 1996, the Department was involved in several court cases related to management of the SWP. In addition, the Department monitored other cases that could significantly impact the management of the SWP. The first six cases discussed below all involve water quality issues in the Bay Delta Estuary.

North Delta Water Agency v. State of California

In 1994, the North Delta Water Agency brought suit against the Department seeking declaratory relief regarding departmental obligations under the 1981 water quality contract. The 1981 contract provides that the Department is to meet certain water quality standards, one located at Emmaton at Sherman Island, and permits relocating the Emmaton standard to Three Mile Slough upon completion of an overland facility to service agricultural lands on Sherman Island.

Under the West Delta Wildlife Management Plan, the Department proposed to purchase land on Sherman Island from willing sellers in lieu of installing an overland facility. Delays in land acquisition occurred because of differences on land prices. In the 1994 lawsuit, the NDWA asserted that the 1991 settlement agreement expired at the end of that year, and requested a judicial declaration that the Department was still obligated to meet the Emmaton standard.

In February 1995, the parties entered into a settlement agreement that included a 1-year interim agreement relating to water quality standards and drought relief, and an agreement regarding interpretation of the 1981 contract provisions relating to the overland facility. Agreements have since been reached with all owners of agricultural lands that would have been serviced by an overland facility; no overland facility will be installed. An agreement with NDWA amending the water quality standards under the 1981 contract is being finalized.

Porgans, et al. v. Babbitt, et al.

On December 7, 1993, Patrick Porgans and the California Sportfishing Protection Alliance filed a claim based on the Department and the U. S. Bureau of Reclamation 1991-92 exceedances of Decision 1485 water quality standards in the Bay-Delta Estuary. The exceedance in the salinity standards occurred during the last 2 years of the 6-year drought, which were critically dry according to the classification set forth in D-1485. In 1992, SWRCB held a hearing where the Department, the U.S. Bureau of Reclamation, and other interested parties presented informa-

tion on compliance with D-1485. In 1993, after closed sessions and a review of the record regarding impacts of the exceedance, the SWRCB noted that minimal harm occurred and that it would not take any action against the Department or USBR.

The case was removed to federal district court in March 1994, where the court dismissed the claim against the federal defendants. The case was remanded to State Superior Court; the plaintiffs have taken no action to pursue the case. In September 1996, the case will be heard in State court.

Golden Gate Audubon Society v. State Water Resources Control Board

On May 31, 1991, several environmental groups filed a lawsuit to set aside the Water Quality Control Plan for the Bay-Delta Estuary adopted earlier that month by the SWRCB. The plan was adopted at the end of the second phase of the Bay-Delta hearings. In the suit, the groups allege that the plan is defective because it does not include flow objectives and that the California Environmental Quality Act was violated because the SWRCB failed to consider flow alternatives. The Department intervened in support of the SWRCB. In December 1994, the SWRCB circulated a *Draft Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary.* After public hearings and comments, the plan was adopted in May 1995, and subsequently the Audubon lawsuit was dismissed except for a claim against the SWRCB for attorney fees. In September 1996, the Sacramento County Superior Court judge is scheduled to hear the liability issues relating to attorney fees.

San Joaquin Tributaries Association, et al. v. State Water Resources Control Board, et al.; County of San Joaquin, et al. v. State Water Resources Control Board, et al.; and Central Delta Water Agency, et al. v. United States, et al.

As discussed above, the SWRCB adopted a water quality control plan for the Sacramento-San Joaquin Bay-Delta Estuary in May 1995, which is based on the December 15, 1994, Principles for Agreement. The plan specifies water quality objectives for the Bay-Delta Estuary. In June 1995, the SWRCB adopted Water Rights Order 95-6, which implemented parts of the May 1995 Water Quality Plan on an interim basis. Three different related lawsuits have been filed challenging either the plan or Water Rights Order 95-6. In San Joaquin Tributaries Association, et al. v. State Water Resources Control Board, et al., a group of irrigation districts located on the San Joaquin River filed a lawsuit in superior court in June 1995 to set aside the May 1995 WQP. The Department intervened in the case. The lawsuit raised a host of legal challenges, including insufficient evidence in the record to support the plan, noncompliance with CEQA, and violation of area-of-origin laws. The SWRCB prepared the administrative record for the case; the case is set for trial in December 1996.

In County of San Joaquin, et al. v. State Water Resources Control Board, et al., a group of public entities that receive water from New Melones Reservoir and Delta entities filed a lawsuit in superior court challenging Water Rights Order 95-6 on the basis that it failed to comply with California Environmental Quality Act, violated the statutory no-injury rule, violated the area-of-origin laws, and denied plaintiffs' due process rights. The Department was named as a real party in interest in the lawsuit. In February 1996, the trial court dismissed the case, ruling that the USBR was an indispensable party to the case and had not been properly joined in the case. Plaintiffs appealed the case in April 1996.

In Central Delta Water Agency, et al. v. United States, et al., three plaintiffs from the County of San Joaquin lawsuit filed an action in federal court, raising the same issues that they had raised earlier in State court, challenging the validity of Water Rights Order 95-6. The lawsuit named the Department and the Director of the Department as defendants. State defendants have answered the lawsuit, and the matter is expected to proceed to a decision in 1997.

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

On December 27, 1995, a lawsuit was filed in California Superior Court challenging the Monterey Amendment, which would make changes to provisions of the SWP water supply contracts. The Amendment included provisions relating to reallocat-

ing deficiencies, Southern terminal reservoir operations, project financing, and transferring the Kern Water Bank, and was originally designed to become effective when all lawsuits challenging it were resolved. The lawsuit alleged that the EIR for the Monterey Amendment was inadequate and that an improper lead agency was named. Pursuant to an agreement with the Department and the water contractors, Central Coast Water Authority acted as lead agency and prepared the EIR. Plaintiffs amended their complaint, alleging, in addition to their CEQA claims, that the KWB was improperly transferred. In May 1995, San Bernardino Municipal Water District filed a cross-complaint, alleging that the Monterey Amendment represents a breach of its water supply contract and that the Department acted in excess of its authority in agreeing to the amendment.

In May 1996, the Court ruled that the Department should have served as lead agency for the EIR, but that this was a harmless error and did not warrant revision of the EIR. The court granted summary adjudication on the cause of action relating to the KWB in favor of the Department, on the grounds that the plaintiffs had improperly failed to join Kern County Water Agency, an indispensable party. The San Bernardino Valley MWD cross-complaint is still pending.

Anderson Farms, et al. v. United States

This case is a claim for inverse condemnation brought in the Federal Court of Claims. Plaintiffs claim that the U.S. has caused a constitutional taking of their land, alleging that the San Luis Canal and ponding basin cause flooding of their land and prevent farming. In addition, the plaintiffs claim the U.S. has contaminated their land with asbestos carried in the flood water. Plaintiffs seek $10,000,000 in compensation for taking of lands and asbestos contamination caused by flooding since 1986, and attorney fees. The Department, which is not a party, is following the case because of its liability for payments made on the claim under the Joint-Use Facilities Operating Agreement for the San Luis Canal. In June 1995, the parties settled the case for $3,171,000, which includes USBR purchase of the subject land, interest, attorney fees, and other miscellaneous costs. The Department is responsible for 55 percent of the settlement amount in accordance with the Joint Use Facilities Operating Agreement, and the case has been dismissed.

Westlands Water District, et al. v. United States

The Department, while not a party to this lawsuit, is following the suit because of its potential impact on the management of the Central Valley Project and SWP. In May 1993, plaintiffs filed this action to compel the USBR and U.S. Fish and Wildlife Service to comply with the National Environmental Policy Act on provisions of the Central Valley Project Improvement Act relating to fishery and wildlife resources. They also want to compel the USBR, USFWS, and National Marine Fisheries Service to comply with NEPA and the Endangered Species Act on the biological opinions for winter-run chinook salmon and delta smelt. Plaintiffs claim that implementation of the CVPIA and the federal ESA resulted in improper reductions of their contractual allocations of water from the CVP. The CVPIA requires USBR to allocate certain amounts of water from the CVP for fisheries and wildlife resources.

In 1993 and 1994, the defendants issued biological opinions under the ESA containing incidental take statements for the endangered winter-run chinook salmon and threatened delta smelt for operation of the CVP and SWP. The biological opinions and incidental take statements include terms and conditions to be implemented by USBR and the Department that constrain project operations and the ability to export water south of the Delta.

In February 1994, the district court denied the federal defendants' motion to dismiss the case on most of the issues. The case was to be heard in two phases. Phase I consisted of NEPA and economic analysis arguments. Phase II dealt with ESA arguments. In May, the court issued an order granting the plaintiffs' preliminary injunction on the CVPIA claims requiring NEPA review before allocating water for Central Valley wildlife refuges [CVPIA section 3406 (d)(1)] and fish and wildlife restoration [CVPIA section 3406 (b)(2)].

In December 1994, the Ninth Circuit Court of Appeals reversed the lower court, vacating the temporary injunction, holding that while other subsec-

tions of section 3406 require EIS review, the two subsections at issue did not. Also in December, an agreement among federal, State, urban, agricultural, and environmental water interests (Bay-Delta Accord) settled many water allocation issues. Subsequent to the accord, the USFWS and NMFS issued 1995 biological opinions on delta smelt and winter-run chinook salmon that recognize project operations described in the accord and which removed the ESA issues from the case. In September 1995, Westlands Water District moved to dismiss the case because of the 1994 accord. The district court dismissed Westlands but granted authority for certain intervenors to continue their claims against the U.S. regarding CVPIA implementation.

Professional Engineers in California Government, et al. v. Department of Water Resources, et al.

In June 1995, Professional Engineers in State Government, the union that represents State engineers, filed a lawsuit seeking to invalidate the Department's Joint Powers Agreement with the Central Coast Water Authority. The Joint Powers Agreement provided for CCWA's assistance to the Department in completing construction of Reaches 5B and 6 (comprising the last 28 miles) of the Coastal Branch. PECG filed the lawsuit after the State Personnel Board rejected PECG's request to invalidate the agreement.

In November 1995, in response to the Department's and CCWA's demurrers to PECG's complaint, the Sacramento County Superior Court dismissed three of PECG's four substantive causes of action, but determined to hold an evidentiary hearing on the issue of whether the civil service provisions of the State Constitution apply to and prohibit this JPA. After holding the evidentiary hearing, the Court ruled that the agreement did not violate the State Constitution, and entered judgment in favor of the Department and CCWA.

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 suit against the Department, challenging under CEQA, the Department's mitigated negative declaration prepared for the reconstruction of the intake tower at Silverwood Reservoir. 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 does 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 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 filed an appeal from the trial court judgment. No order for stay (preventing work from proceeding) was filed, and construction at Silverwood commenced in September 1995. Work is scheduled to be complete by May 1997. Oral argument on the appeal is anticipated to be scheduled in October or November 1996.

Department of Water Resources v. Nevada Power Company

The Department and Nevada Power Company are co-owners of Reid Gardner Unit 4, a coal-fired electric generating plant near Las Vegas, Nevada. NPC operates the plant and bills the Department monthly for a portion of the costs of operation. A monthly transmission service charge, calculated according to a formula in the Participation Agreement for the plant, is included in the monthly bill. For several years, NPC has been including in the service charge the cost of constructing and operating a transmission line between Utah and Nevada. The Department receives no benefit from the line, but NPC has refused to omit this part of the service charge from the Department's bill.

The Department filed suit in Sacramento County Superior Court in January 1995, seeking a declaration that the costs of the Utah/Nevada line be excluded from the Department's service charge, and

seeking damages of $1.4 million, the amount that the Department had overpaid when the suit was filed. In fall 1994, the Department had filed a similar complaint with the Federal Energy Regulatory Commission, which had taken no action by the time the suit was filed. In November 1995, the Superior Court granted NPC's motion to stay the lawsuit pending some action by FERC.

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, which alleges 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 the summer of 1995.

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

Part III

State Water Project Operations

Chapter 9
Water Storage

Bidwell Bridge spanning Lake Oroville

Significant Events

- In January, a series of warm winter storms caused the Department to declare a flood mobilization. Releases from SWP reservoirs were increased to prepare flood control space for ensuing inflows from these storms.
- March rainfall amounted to triple the normal amount for the month, making it the wettest March in 70 years of record. Heavy runoff at Cantua Creek and Arroyo Pasajero caused considerable damage to the California Aqueduct; the Kern River Intertie was opened to prevent overtopping from within the Aqueduct due to these uncontrolled inflows.
- Storage at San Luis Reservoir peaked March 14 1995, at 2,042,722 acre-feet, or 101 percent of normal maximum operating capacity.
- Due to triple the average precipitation in June, peak storage at Lake Oroville occurred June 24, 1995, at 3,534,575 acre-feet, more than 100 percent of normal maximum operating capacity.
- The two large flood events in January and March refilled reservoirs depleted by the previous very dry year (1994) and assured ample water supplies for 1995. Statewide runoff for water year 1994-95 was 180 percent of average.
- The Sacramento River Index for water year 1994-95 was 33.9 million acre-feet and classified as "wet" under Decision 1485 criteria.

In meeting its contracted obligations to the State Water Project long-term water supply contractors, the Department of Water Resources monitors precipitation, calculates runoff, and operates 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 1994-1995

Precipitation and Runoff

Water year 1994-1995 was one of California's wettest years this century. The previous water year had been critically dry, prompting fears that the drought had returned. Conditions during the first 3 months of the new season were not unusual; seasonal precipitation totals at the end of December 1994 were about 90 percent of average. This all changed during the first week of January 1995, when a storm of subtropical origin unleashed the first set of floods that year. January statewide precipitation was triple average, restoring reservoir storage to near normal levels. February was very dry with about 35 percent of average precipitation. March saw a renewal of rains, again triple normal for the month, with some record floods in the Central Coast region, which included Arroyo Pasajero. April, May, and June were above average. June rainfall was again three times average for the month, but since June is normally a dry month this did not affect volumes much. June was also cool through the middle of the month, and the delay in high elevation snowmelt added to the uncertainty of runoff. July, August, and September were dry with fewer summer mountain showers than usual.

The first 2 months of the following water year, October and November, were extremely dry. A strong storm in mid-December, however, provided above-normal precipitation for that month and greatly improved the outlook for the 1996 water year.

Figure 9-1 shows statewide precipitation in water year 1994-1995, by hydrologic region, as a percentage of average.

Runoff was boosted by 2 very wet months, January and March. January runoff statewide was about 2.5 times average and runoff during March was three times average. Runoff for water year 1994-95 was 180 percent of average compared to only 40 percent the previous year. If February had not been dry, runoff in water year 1994-1995 probably would have been about the same as the 220 percent in 1983, the wettest year this century. Sacramento River basin unimpaired runoff was 33.9 million acre-feet, the second wettest year of record, although just above the 33.7 million acre-feet reported in 1907. San Joaquin River system unimpaired runoff (including the Stanislaus, Tuolumne, Merced, and upper San Joaquin River at Friant) was 12.4 million acre-feet, making 1995 the third wettest year of record. This runoff was exceeded by 1983 (15 million acre-feet) and 1906 (12.43 million acre-feet) and was just slightly over the 12.3 million acre-feet in 1969. Snowmelt runoff during April through July was the fourth wettest for both the Sacramento and San Joaquin River systems. The April 1 snowpack was 175 percent of average, compared to 50 percent in 1994, 150 percent in 1993, and 220 percent statewide in 1983. The larger snowpack and subsequent melt helped fill most of the State's major reservoirs.

At the start of calendar year 1995, reservoir storage stood at 75 percent of average. Statewide storage increased nearly 8 million acre-feet in January to end the month at 105 percent of average. The water year ended at 130 percent of average, providing excellent carryover for the following year.

Storage

To collect and store water for future deliveries, the SWP operates a complex system of 28 dams and reservoirs. Lake Oroville, in Northern California, is the first of two primary SWP conservation facilities. Net inflow to Lake Oroville flows from the Feather

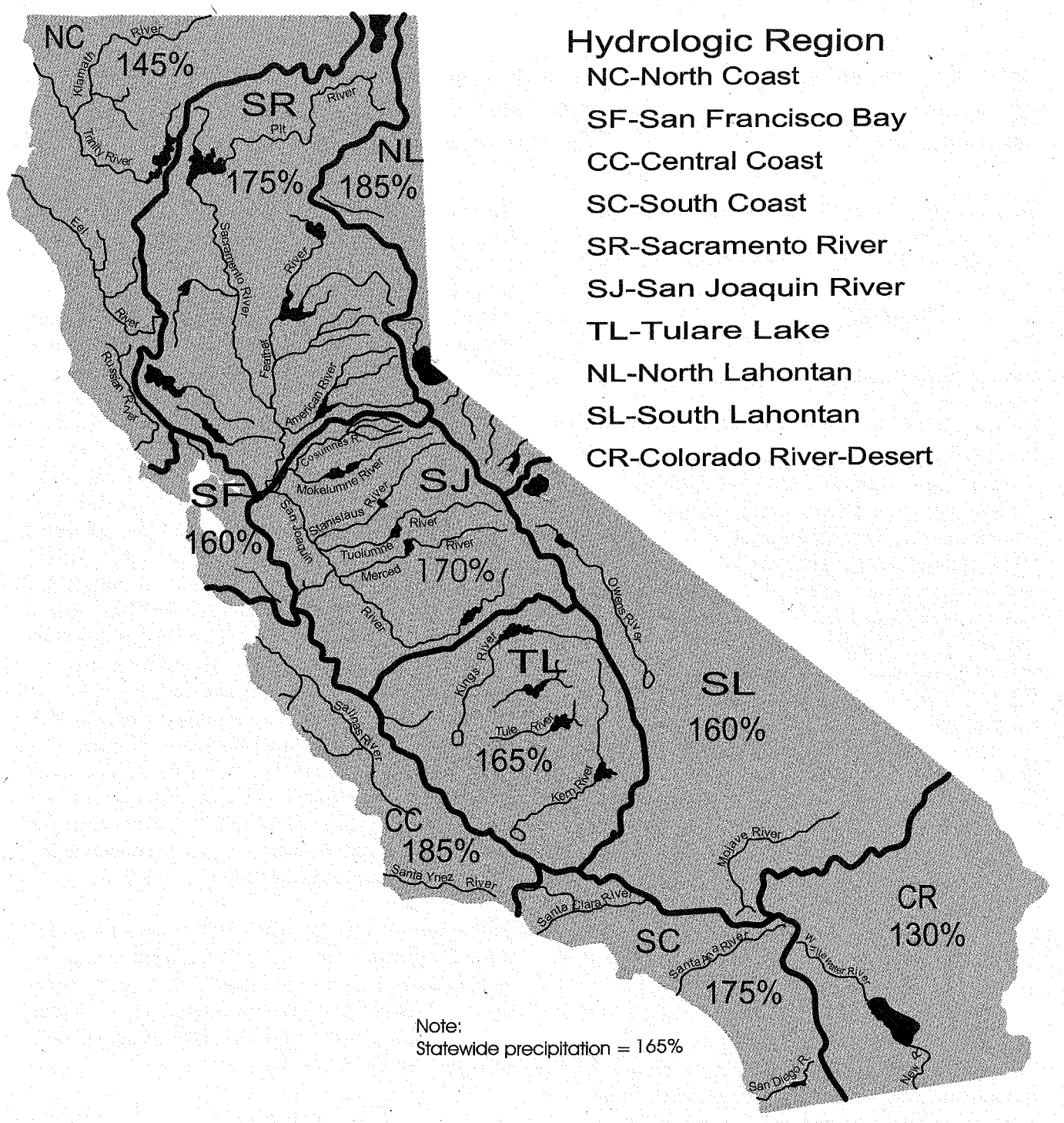


Figure 9-1
Statewide Precipitation by Hydrologic Region, 1994-95 Water Year, in Percentage of Average

River. Pumpback operations at Hyatt Powerplant also impact storage.

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. The remaining 26 dams and reservoirs are used to regulate the conserved supply into water delivery patterns designed to fit local needs.

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 1994-95 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 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 1994-95 water year totaled about 8.8 million acre-feet, 200 percent of average. Minimum storage occurred November 9, 1995, at 1,543,303 acre-feet, 44 percent of normal maximum operating capacity of 3,521,797 acre-feet. Maximum storage occurred June 24, 1995, at 3,534,575 acre-feet, more than 100 percent of normal maximum operating capacity. See Figures 9-2 and 9-3 for monthly and cumulative inflow into Lake Oroville. Figure 9-4 compares end-of-month storage at Lake Oroville for the 1994 and 1995 calendar years.

San Luis Reservoir. San Luis Reservoir, operated jointly by the Department and the U.S. Bureau of Reclamation according to operating procedures completed in June 1981, has a normal operating capacity of 2,028,000 acre-feet. The SWP share of the San Luis normal operating capacity is 1,062,000 acre-feet.

At the beginning of the 1994-95 water year, San Luis Reservoir contained 24 percent of its normal maximum operating capacity; the SWP share was 393,825 acre-feet. By March 14, San Luis Reservoir reached its maximum storage for 1995 at 2,042,722 acre-feet, or 101 percent of normal maximum operating capacity. The highest end-of-month SWP share of storage was in February at 1,171,880 acre-feet (Figure 9-5).

Lake Del Valle. Lake Del Valle, situated off the South Bay Aqueduct, primarily stores water for use in Santa Clara and Alameda counties. At the beginning of the 1994-95 water year, Lake Del Valle held 34,464 acre-feet, about 86 percent of normal maximum operating capacity (39,914 acre-feet). Its highest monthly storage occurred in March 23, 1995, at 47,801 acre-feet.

By the end of the 1994-95 water year, storage in Lake Del Valle dropped to 34,670 acre-feet, 87 percent of normal maximum operating capacity. Releases to Arroyo Valle and South Bay Aqueduct from Lake Del Valle totaled 56,620 acre-feet for the 1994-95 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 1994-95 water year, these reservoirs held 575,177 acre-feet, 82 percent of their combined normal maximum operating capacity of 701,321 acre-feet. At the end of the 1994-95 water year they held 644,745 acre-feet, 92 percent of the combined normal maximum operating capacity.

Diversions from the Delta

The SWP diverts water from the Sacramento-San Joaquin Delta through Banks Pumping Plant and Barker Slough Pumping Plant for delivery to SWP storage facilities and contractors. In 1995, the SWP diverted 2,116,879 acre-feet at Banks Pumping Plant, including 28,417 acre-feet of Central Valley Project water wheeled by the Department. Figure 9-6 shows the amounts of water pumped each month at Banks Pumping Plant; Figure 9-7 shows the monthly amounts of water diverted from the Delta by the SWP and CVP in 1995.

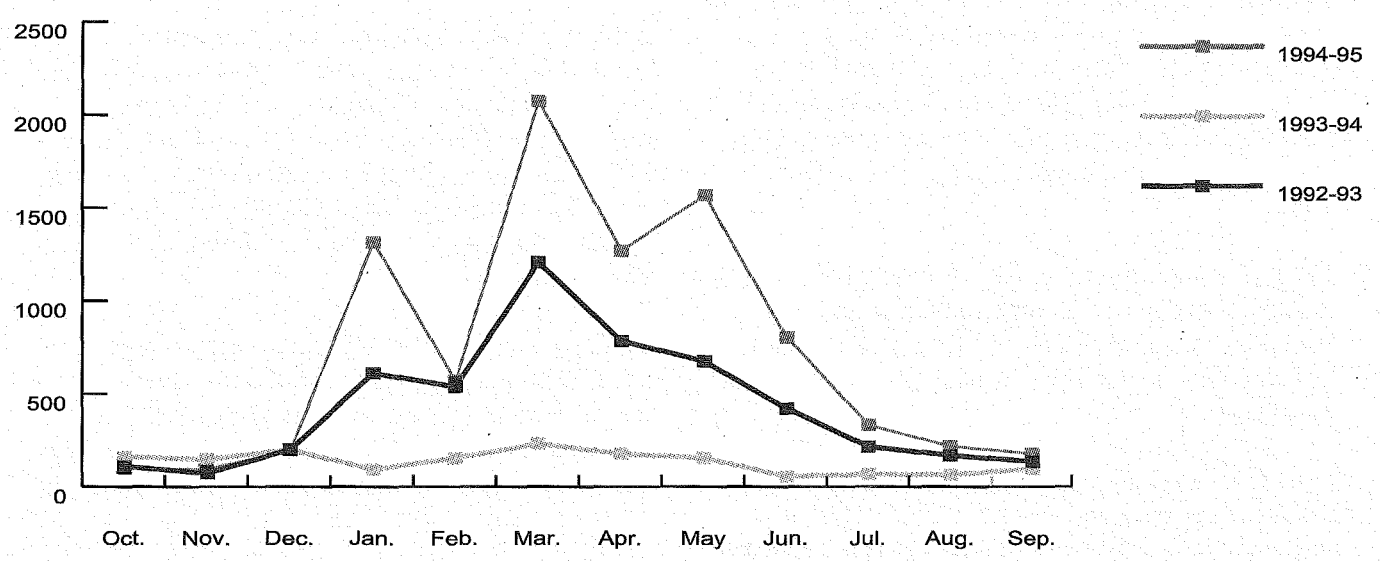


Figure 9-2
Monthly Inflow to Lake Oroville from Feather River, 1993-95 water years

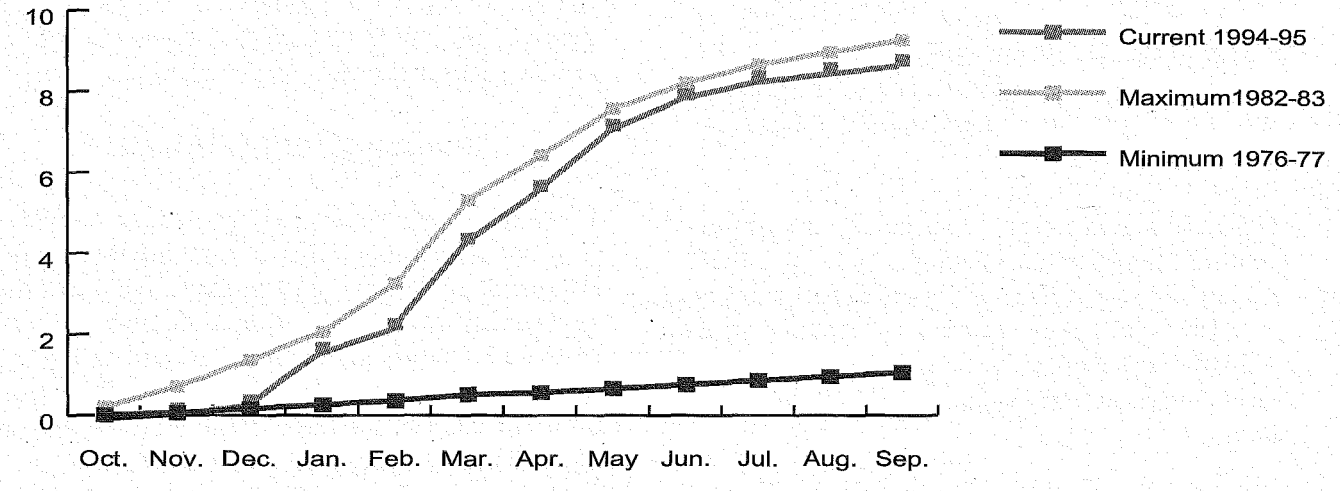


Figure 9-3
Cumulative Inflow into Lake Oroville from Feather River

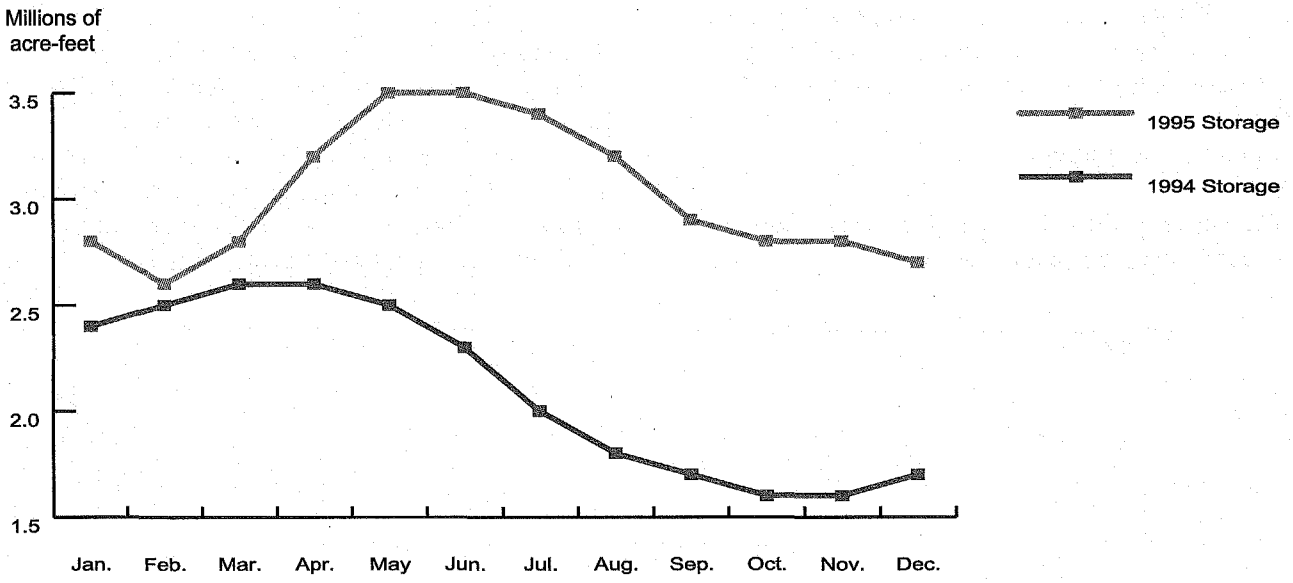


Figure 9-4
End-of-Month Storage in Lake Oroville, 1994 and 1995 Calendar Years

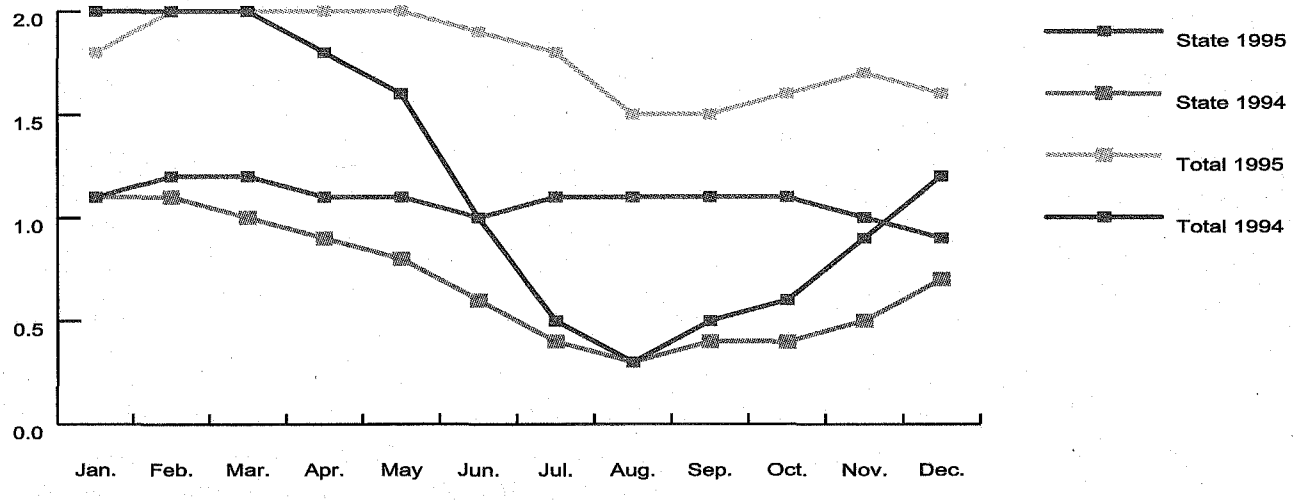


Figure 9-5
End-of-Month Storage in San Luis Reservoir, 1994 and 1995 Calendar Years

The SWP also diverted 27,435 acre-feet at the Barker Slough Pumping Plant for deliveries through the North Bay Aqueduct for use by North Bay Aqueduct water contractors. From Banks Pumping Plant, water is either delivered 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.

In the San Joaquin Valley near Kettleman City, the existing Coastal Branch Aqueduct serves agricultural areas west of the California Aqueduct. This branch is now being extended to serve municipal and industrial water users in San Luis Obispo and Santa Barbara Counties. The extended Coastal Branch is scheduled to be completed in 1997. In 1995, SWP water delivered to the San Joaquin Valley totaled 1,397,799 acre-feet. Figure 9-8 shows the amount of water delivered each month. In 1995, water pumped through Edmonston Pumping Plant for delivery to Southern California totaled 563,704 acre-feet. Figure 9-9 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.

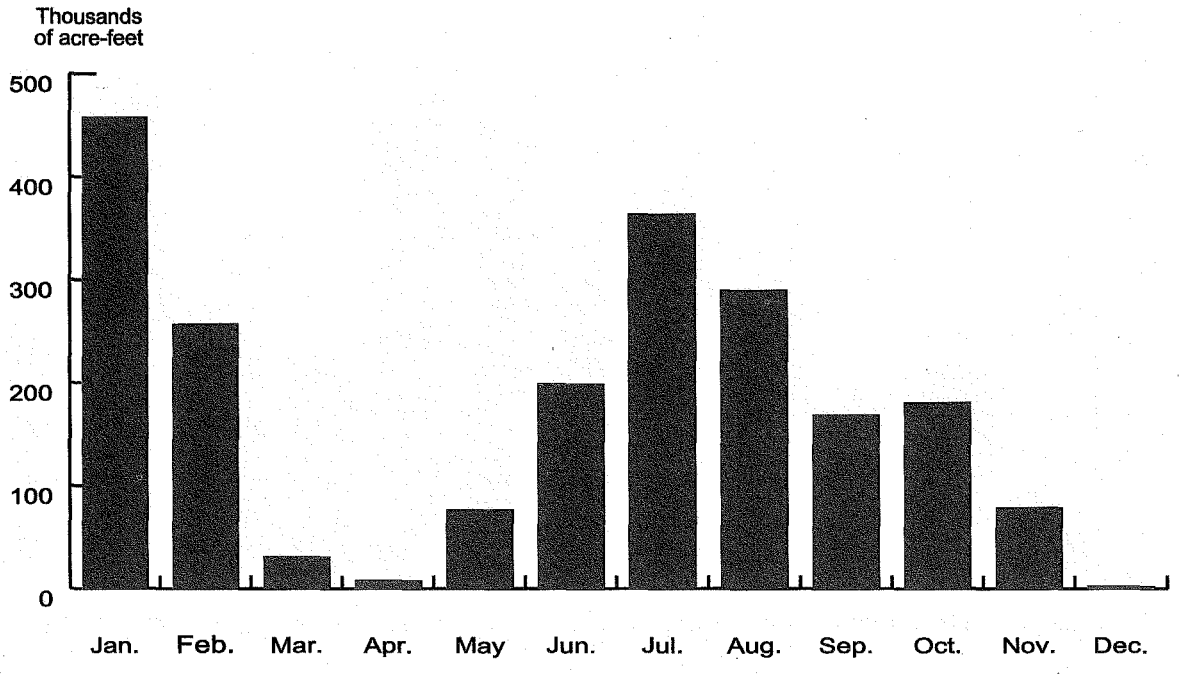


Figure 9-6
Water Pumped at Banks Pumping Plant in 1995, by Month

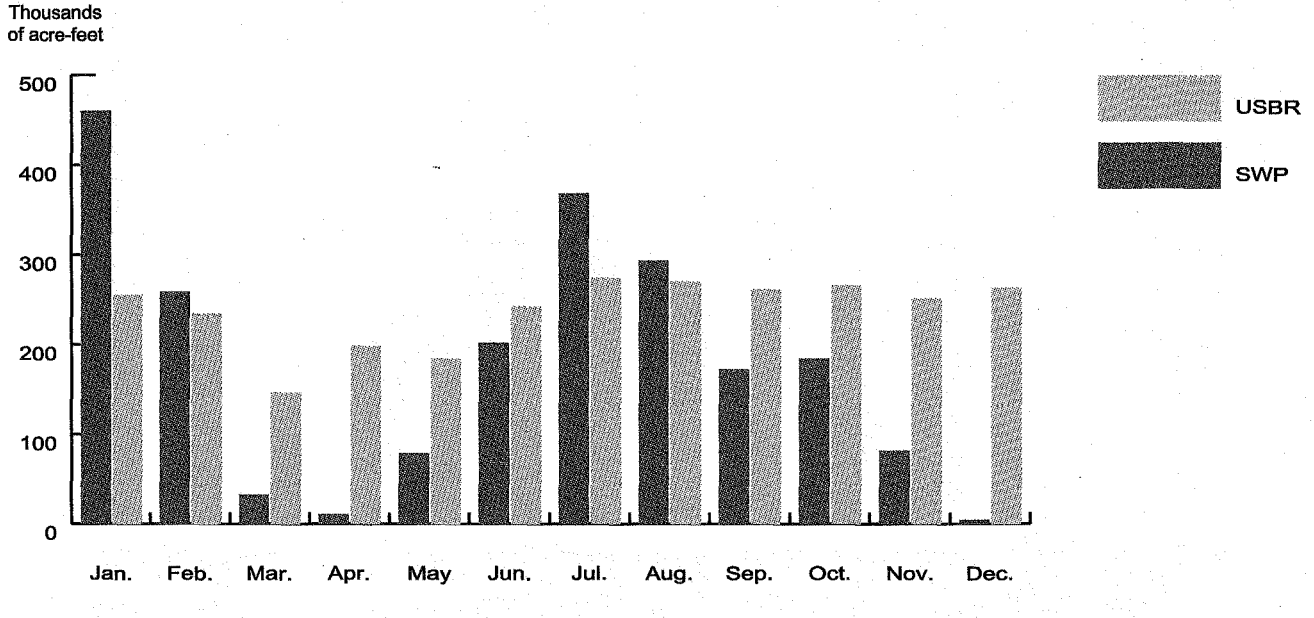


Figure 9-7
Water Diverted from the Sacramento-San Joaquin Delta by State Water Project and Central Valley Project in 1995, by Month

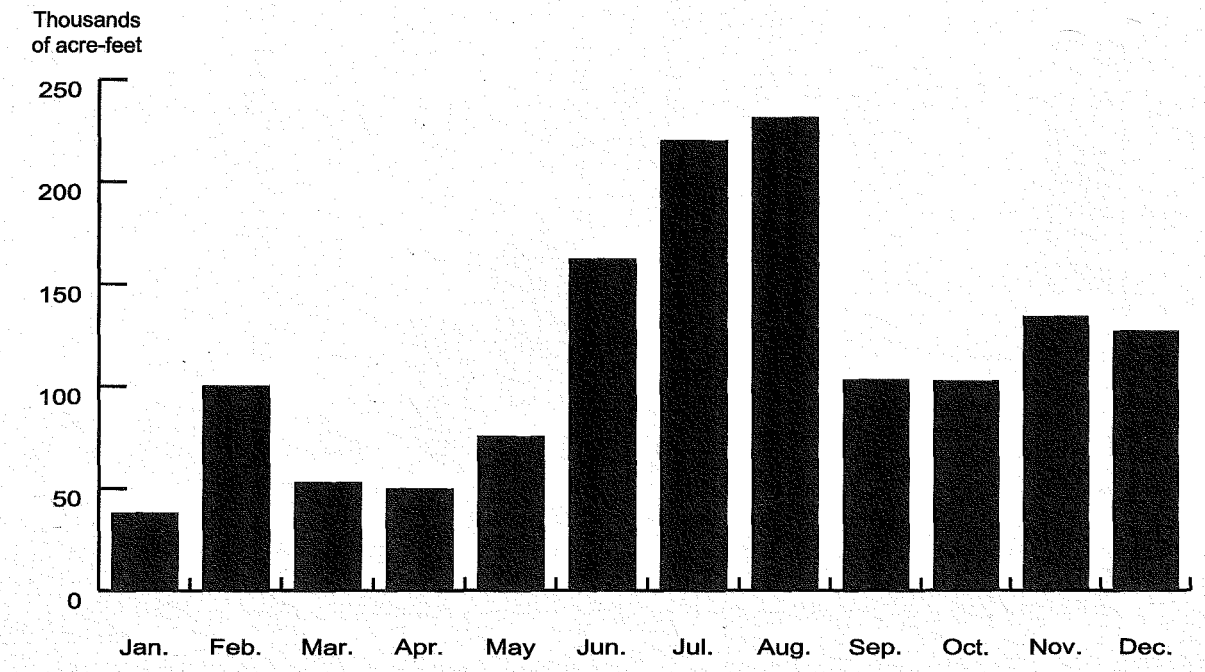


Figure 9-8
SWP Water Conveyed to San Joaquin Valley in 1995, by Month

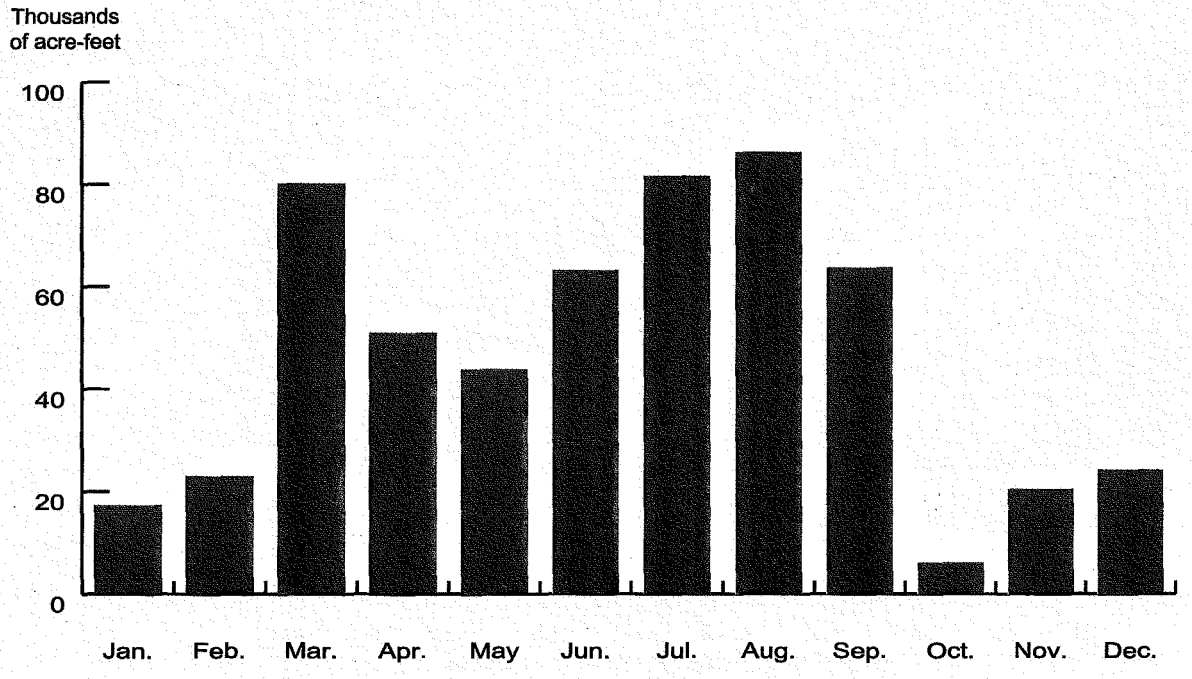


Figure 9-9
Water Pumped at Edmonston Pumping Plant in 1995, by Month

Chapter 10

Water Contracts and Deliveries

Cordelia Forebay

Significant Events

- On January 14, 1995, the Department approved 100 percent of State Water Project contractors' requests for 3,163,780 acre-feet of 1995 entitlement water. Heavy rainfall throughout the State caused demands to decrease. SWP contractors took delivery of only 1,889,092 acre-feet of the approved 1995 entitlement water.

- During December 1995 and February 1996, 20 out of 29 SWP contractors modified their long-term Water Supply Contracts by executing the Monterey Agreement. In December 1995, the Department implemented many of the Monterey Principles on an interim basis through a Water Service Contractors Council Memo. This interim implementation allowed all 29 contractors to apply the principles while they obtained necessary approvals to execute the Amendment.

- In December 1995, the Department entered into agreements with Kern County Water Agency to transfer the Kern Fan Element property to KCWA and establish operational procedures for the Department to extract its share of groundwater stored in the Kern Water Bank. These items were included in the Monterey Principles.

- Prior to the interim implementation of the Monterey Principles, the Department entered into letter agreements with Kern County Water Agency to construct ponds and spread flood waters on the Kern Fan Element property. In 1995, KCWA spread and recharged about 200,000 acre-feet of water on the KFE.

- On December 27, 1995, the Planning and Conservation League filed a lawsuit against the Department and Central Coast Water Authority challenging the Monterey Agreement.

- On August 21, 1995, the Department executed Amendment No. 1 to an agreement among the Department, KCWA, and Semitropic Water Storage District for the introduction of local water into the California Aqueduct. The Amendment was significant because it approves the first permanent turn-in facility on the Aqueduct.

- On August 18, 1995, an agreement among the Department, The Metropolitan Water District of Southern California, and Kern County Water Agency was executed to establish operational procedures to enable MWD to participate in a groundwater storage and exchange program with Semitropic Water Storage District, a member unit of KCWA.

- On December 8, 1995, the Department and KCWA executed Amendment No. 21 to KCWA's long-term water supply contract to authorize KCWA's participation in the Carryover Entitlement Water Program.

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, and operating facilities needed to provide water service, the agencies contractually agreed to repay all SWP capital and operating costs.

The Department delivers water to SWP contractors according to long-term water supply contracts, which may be amended as needed. The contracts, among other things, specify amounts of water that the Department may deliver to SWP contractors every year. During the 1995-1996 reporting period, the Department executed 24 amendments to these contracts, including 20 amendments resulting from the Monterey Agreement.

The Department also enters into other 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 the 1995-1996 reporting period, the Department executed 17 water conveyance/storage agreements with SWP contractors; 2 agreements related to the Monterey Agreement; 1 turnout agreement; and 3 amendments to existing agreements other than long-term water supply contracts. During the same reporting period, the Department executed 13 water conveyance agreements, 1 turnout agreement, and 9 amendments to existing agreements with non-SWP contractors.

Detailed information about contracts and amendments follows.

Long-Term SWP Water Supply Contracts

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

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

All water contracts signed in the 1960s included an estimate of the date water would first be delivered and a schedule of the amount of water the agency could expect to be delivered annually (annual entitlement). That amount was designed to increase gradually until the maximum amount of annual entitlement was reached. The total combined 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.

Table 10-1
Amendments to Water Supply Contracts, by Category

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

a) See Table 10-2, "Amendments to Water Supply Contracts, June 30, 1996, 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.

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 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 10-1 describes the eight categories of amendments while Table 10-2 lists contractors to which those categories apply.

The following long-term contracts were amended between July 1, 1995, and June 30, 1996.

Dudley Ridge Water District. The Department executed Amendment Number 22, dated January 24, 1996, to the long-term water supply contract between DRWD and the Department. The Amendment provided for DRWD to relinquish 4,330 acre-feet of 1996 entitlement water and reduce its Table A entitlement by that amount beginning in 1997 in accordance with the Monterey Principles.

Kern County Water Agency. The Department executed Amendment Number 21, dated December 8, 1995, to the long-term water supply contract between KCWA and the Department. The Amendment authorized KCWA to participate in the Carryover Entitlement Water Program.

Kern County Water Agency. The Department executed Amendment Number 24, dated December 13, 1995, to the long-term water supply contract between KCWA and the Department. The Amendment provided for KCWA relinquishment of 36,340 acre-feet of 1996 entitlement water, and the reduction of its Table A entitlement by 40,670 acre-feet for agricultural use beginning in 1997 in accordance with the Monterey Principles.

Table 10-2
Amendments to Water Supply Contracts, June 30, 1996, by Category and Contracting Agency

Contracting Agency	State Water Project Amendment Category (a 1	2	3	4	5	6	7	8
Upper Feather River Area								
City of Yuba City	•				•			
County of Butte	•			•	•			
Plumas County Flood Control and Water Conservation District				•				
North Bay Area								
Napa County Flood Control and Water Conservation District	•			•	•	•		•
Solano County Water Agency	•		•	•	•	•		•
South Bay Area								
Alameda County Flood Control and Water Conservation District-Zone 7	•			•	•		•	•
Alameda County Water District				•	•	•	•	•
Santa Clara Valley Water District	•			•	•	•	•	•
San Joaquin Valley Area								
County of Kings				•	•		•	
Devil's Den Water District	•			•	•	•		
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 10-1, "Amendments to Water Supply Contracts, by Category."

San Gorgonio Pass Water Agency. The Department executed Amendment Number 14, dated May 3, 1996, to the long-term water supply contract between SGPWA and the Department. The Amendment reduced the SGPWA Table A entitlement and established a 10-year entitlement delivery build-up period.

Monterey Amendments. In December 1995, the Department executed Monterey Amendments with Solano County Flood Control and Water Conservation District, Alameda County Flood Control and Water Conservation District-Zone 7, Alameda County Water District, Santa Clara Valley Water District, DRWD, KCWA, TLBWSD, Santa Barbara County Flood Control and Water Conservation District, Antelope Valley-East Kern Water Agency, Crestline-Lake Arrowhead Water Agency, Desert Water Agency, Mojave Water Agency, and Metropolitan Water District.

In February 1996, the Department executed Monterey Amendments with Napa County Flood Control and Water Conservation District, Oak Flat Water District, San Luis Obispo County Flood Control and Water Conservation District, Littlerock Creek Irrigation District, Palmdale Water District, San Gabriel Valley Municipal Water District, and San Gorgonio Pass Water Agency. Full execution of the provisions of the Monterey Amendments is pending resolution of litigation associated with the Amendments.

The Monterey Amendments increase the reliability of existing water supplies; provide stronger financial management for the SWP; and increase water management flexibility, providing more tools to local water agencies to maximize existing facilities. Changes to SWP operations incorporated in the Monterey Amendments are described in the following paragraphs.

Water Allocations. Controversy regarding future allocations is resolved by allocation based on entitlements. In years of shortage, the initial supply reduction to agricultural entitlement water is eliminated. Current categories of surplus, wet weather, and Article 12(d) water are replaced by a single category of Interruptible Water allocated on the basis of entitlement and delivered at the same power rate used for entitlement deliveries.

Transfer of Entitlement and Land. An annual entitlement of 45,000 acre-feet of agricultural water—4,330 acre-feet from DRWD and 40,670 acre-feet from KCWA—will be permanently transferred to the Department and retired. One hundred and thirty thousand acre-feet of agricultural entitlements will be made available for permanent sale to contractors for urban use. The Kern Fan Element of the Kern Water Bank is transferred to the KCWA.

Financial Restructuring. The Department will develop a number of financial programs with SWP funds that will establish:

- an operating reserve;
- a SWP facilities capital account to continue paying for certain planning studies for which financing is not otherwise available; and
- a program of water rate management, which involves a reduction in charges for all signing contractors when SWP cash flow permits, as well as the establishment by the Agricultural Contractors of a rate management trust fund.

Operational Flexibility. The contractors paying for the Castaic and Perris terminal reservoirs will be permitted to increase their control and management of a portion of the storage capacities to optimize the operation of both local and SWP facilities. Those contractors are MWDSC, VCFCD, and CLWA.

Contractors will have the right to transport non-project water in SWP facilities at the same power rate used for entitlement deliveries. Rules for carryover in SWP surface conservation reservoirs are expanded, allowing storage by contractors from year to year when space is available. Within certain constraints, SWP water may be stored from year to year in non-SWP surface storage facilities outside a contractor's service area for later use within the service area. There will be no limits on groundwater storage of SWP water outside a contractor's service area for later use within the service area. Contractors not storing in a given year can elect to participate in an annual turn-back pool of allocated but unneeded water. This water will be sold at a percentage of the Delta Water Rate to either the Department or other contractors. Contractors can also temporarily, for a period of years, reduce their Table A entitlement and receive rate reductions.

Miscellaneous Agreements with Long-Term SWP Contractors

In 1995 and through June 30, 1996, the Department entered into several agreements.

Water Conveyance/Storage Agreements

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

Alameda County Flood Control and Water Conservation District-Zone 7. A contract between the Department and ACFCWCD-Zone 7 was executed on July 28, 1995. This contract provides for the conveyance of water by the Department from Byron-Bethany Irrigation District to ACFCWCD-Zone 7. The contract is effective from 1995 through 1998 and provides for conveying up to 5,000 acre-feet of water by direct delivery between March 15 and October 15 of each year during the contract term.

Alameda County Water District. The letter agreement, signed November 14, 1995, extended the contract for use of storage space in Lake Del Valle by ACFCWCD-Zone 7 and ACWD for another year, through October 1996.

County of Kings. In May 1996, the Department approved the delivery of up to 3,000 acre-feet of DRWD entitlement water to Kings County lands adjacent to DRWD pending completion of annexation of the land by DRWD. Approval of the delivery was based on the use of the water by the same farmer who farms property in DRWD and intends to irrigate farmlands adjacent to the DRWD service area.

Dudley Ridge Water District. A letter agreement signed September 19, 1995, between the Department and DRWD approved the transfer of up to 15,000 acre-feet of DRWD 1995 SWP entitlement water to Westlands Water District. This transfer was part of an exchange with WWD that would provide DRWD with the ability to secure an equivalent quantity in a future year for more beneficial use.

Dudley Ridge Water District. The letter agreement among DRWD, KCWA, and the Department, signed May 6, 1996, provided for the transfer of up to 3,000

acre-feet of KCWA 1995 SWP entitlement water to DRWD. The water was used by a farmer who farms property in both water districts.

Kern County Water Agency. A letter agreement signed November 17, 1995, between the Department and KCWA approved the transfer of up to 25,000 acre-feet of the KCWA 1995 SWP entitlement water to WWD. The transfer is part of an exchange with WWD that would provide KCWA with the ability to secure an equivalent quantity of water in a future year for more beneficial use.

Kern County Water Agency. A letter agreement signed May 13, 1996, between the Department and KCWA approved the delivery of up to 75,000 acre-feet of the KCWA 1996 SWP entitlement water to WWD. The delivery facilitated an exchange between KCWA and WWD in which WWD transferred up to 75,000 acre-feet of Friant-Kern Canal water to KCWA in exchange for delivery of a like amount of KCWA SWP entitlement water.

Kern County Water Agency. An exchange agreement dated June 15, 1995, provided for exchanging approximately 10,000 acre-feet of water between KCWA, Tulare Irrigation District, and WWD. In 1995, the Department conveyed 9,875 acre-feet of water to Reach 7 of the California Aqueduct for WWD under this agreement.

Kern County Water Agency. A letter agreement signed May 29, 1996, between the Department and KCWA approved the transfer of up to 55,000 acre-feet of KCWA 1996 SWP entitlement water to WWD. The agreement facilitated a water transfer from landholders within four member units of the Agency—Lost Hills Water District, Berrenda Mesa Water District, Belridge Water Storage District, and Wheeler Ridge-Maricopa Water Storage District—to lands farmed in WWD.

Kern County Water Agency. A letter agreement signed June 27, 1996, between the Department and KCWA approved an exchange of up to 40,000 acre-feet of KCWA SWP entitlement water to facilitate water transfers by La Hacienda, Incorporated. The arrangements enabled La Hacienda to transfer and sell 40,000 acre-feet of its Lake Isabella water through storing the water in the Kern Water Bank in 1996 and exchanging the water with KCWA. Only 10,000 acre-feet were transferred in 1996. The remaining 30,000 acre-feet will require further approval of the Department.

Littlerock Creek Irrigation District. The agreement, dated February 22, 1996, among LCID, PWD, and the Department, provides for the delivery of a portion of LCID annual SWP entitlement water to a turnout in PWD service area. Water diverted at the PWD turnout under this contract is treated by PWD at its water treatment plant, and returned to LCID for use within the LCID service area.

Metropolitan Water District of Southern California. The agreement, signed August 18, 1995, among MWD, KCWA, and the Department, put in place operational procedures for a groundwater storage and exchange program involving the Semitropic Water Storage District groundwater basin. This was in accordance with the provisions of the Monterey Agreement that encourage operational flexibility for the SWP, such as groundwater storage of SWP water outside a contractor's service area for later use within the service area.

San Gabriel Valley Municipal Water District. The letter agreement, dated July 19, 1995, among DRWD, SGVMWD, and the Department, provided for the delivery of up to 21,053 acre-feet of the DRWD 1995 entitlement water to SGVMWD for storage in its groundwater basin and the future return of the water to DRWD by means of an entitlement water exchange with SGVMWD.

Tulare Lake Basin Water Storage District. The letter agreement, signed October 16, 1995, among KCWA, TLBWSD, and the Department, approved the transfer of up to 1,500 acre-feet of the KCWA 1995 SWP entitlement water to TLBWSD. Lost Hills Water District, a member unit of KCWA, transferred 1,500 acre-feet to Westlake Farms, located in the TLBWSD service area. The transferred water was used to create wetland habitat for shore birds as required under a mitigation agreement between the regional water quality control board and LHWD for operation of the LHWD evaporation basin.

Tulare Lake Basin Water Storage District. The letter agreement, dated October 30, 1995, among KCWA, TLBWSD, and the Department, approved the delivery of up to 70,000 acre-feet of the KCWA 1995 SWP entitlement water to TLBWSD. The delivery facilitated exchanges among KCWA, TLBWSD, Fresno Irrigation District, and Lower Tulare River Irrigation District.

Tulare Lake Basin Water Storage District. The letter agreement, signed May 7, 1996, among DRWD, TLBWSD, and the Department, provided for the delivery of 95 acre-feet of the DRWD 1996 entitlement water to the TLBWSD turnout. The water was delivered to farmland in the northern portion of DRWD service area that cannot be served by its current distribution system.

Tulare Lake Basin Water Storage District. A letter agreement signed June 6, 1996, 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 Hanson Ranches, a landowner in the TLBWSD, to lands it farms in WWD under the name of Vista Verde Farms, Incorporated.

Turnout Agreements

County of Butte. On January 6, 1992, the Department, County of Butte, and Del Oro Water Company executed an agreement to allow construction, operation, and maintenance of the Lime Saddle Marina Turnout, located on Lake Oroville, to divert water to Del Oro's water treatment plant. The turnout was completed in February 1995, and water deliveries began April 20, 1995.

Mojave Water Agency. On October 6, 1995, MWA and the Department executed an agreement to allow construction, operation, and maintenance of the Mojave River Turnout, located at milepost 389.2 of the California Aqueduct. Phase I construction began in November 1995, while Phase II construction will begin in October 1996. Once completed, the siphon-intake turnout will deliver up to a maximum of 90 cfs. The 72-mile Mojave River Pipeline will then convey the SWP water to several subbasins of the Mojave River basin.

Agreements Related to the Monterey Agreement

Agricultural Trust Agreement. One provision of the Monterey Agreement calls for the Agricultural Contractors to establish a rate management trust fund to provide for rate management and stabilization. The Trust Agreement between the County of Kings, DRWD, Empire West Side Irrigation District, KCWA, OFWD, TLBWSD, and the Department sets forth provisions for the establishment of an agricultural rate-management trust fund.

Recovery Agreement. In 1988, the State acquired property known as the Kern Fan Element as part of the SWP to incorporate into the Kern Water Bank. The principles of the Monterey Agreement established that the State would convey the KFE property to the agricultural contractors, namely the KCWA. "The Agreement for the Exchange of the Kern Fan Element of the Kern Water Bank By and Between the Department of Water Resources of the State of California and KCWA" outlined the terms and conditions for conveyance of the property. One of the terms of the Exchange Agreement was that the State shall retain one-half of the La Hacienda program water and one-half of the Berrenda Mesa demonstration program water available for extraction in the KFE. The La Hacienda program water was 83,127 acre-feet that had not been extracted upon close of escrow of the 98,005 acre-feet of the groundwater purchased by the State from the KCWA, and the KCWA from La Hacienda, Inc., in 1990. The Berrenda Mesa demonstration program water was 2,532 acre-feet that had not been extracted before the close of escrow as part of the 1990 Berrenda Mesa demonstration program. The Recovery Agreement, dated December 13, 1995, between the Department and KCWA set forth the provisions for the recovery of the State portion of the La Hacienda and Berrenda Mesa waters.

Turnback Water Pool Program. Under Article 56(d) of the Monterey Agreement, the 1996 Turnback Water Pool Program was initiated through Notice to the State Water Project Contractors No. 96-2, dated February 6, 1996. All SWP contractors were permitted to participate in the program whether or not their Monterey Amendment had been signed. The program allowed SWP contractors to offer a portion

of their approved 1996 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; transactions for pool B occurred in March. Turnback water sold for 50 percent of the Delta Water Rate per acre-feet through pool A and for 25 percent of the Delta Water Rate per acre-feet through pool B. All money collected through the turnback pool program was paid to the selling contractors. The 1996 Turnback Water Pool Program closed April 1, 1996.

The following contractors participated in pool A of the turnback water pool program:

- SLOCFCWCD sold 16,797 af;
- SBCFCWCD sold 28,328 af;
- AV-EKWA sold 42,100 af;
- CLWA sold 6,833 af;
- SGVMWD sold 5,242 af; and
- TLBWSD purchased 99,300 af.

The following contractors participated in pool B of the turnback water pool program:

- SLOCFCWCD sold 7,331 af;
- SBCFCWCD sold 10,807af;
- AV-EKWA sold 37,478 af;
- CLWA sold 14,867 af;
- SGVMWD sold 7,558 af;
- ACFCWCD-Zone 7 sold 19,600 af;
- City of Yuba City sold 6,000 af;
- DWA purchased 64,522 af; and
- CVWD purchased 39,119 af.

Amendments to Miscellaneous Agreements with Long-Term SWP Contractors

The Department amended the following agreements between July 1, 1995, and June 30, 1996.

Kern County Water Agency. The Department executed Amendment Number 1, dated August 21, 1995, to the agreement among the Department, KCWA, and Semitropic Water Storage District allowing introduction of local water into the California Aqueduct. The amendment extended the term of the agreement from January 1, 2005, to November 4, 2035. The agreement was extended to match the term of the Point of Delivery Agreement among the KCWA, the MWD, and the Department that puts in place operational procedures for a groundwater banking program involving the SWSD groundwater basin and the turn-in.

Kern County Water Agency. By letter agreement dated November 22, 1995, the Department amended the Stage Two agreement between KCWA and the Department regarding the use of KFE properties to allow for spreading over the area encompassing both the Stage One and Stage Two areas. The inclusion of the Stage One property in the Stage Two agreement allowed for continued spreading on the Stage One property through March 31, 1996. By letter agreement dated March 28, 1996, the Department extended the term of the Stage Two agreement to March 31, 1997.

Kern County Water Agency. The Department executed Amendment Number 4 to the agreement between KCWA and the Department for operation of the Hacienda groundwater program. The Amendment established a new price and a new cost schedule for the 2-year period beginning April 1, 1996.

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, for the period July 1, 1995, through June 30, 1996.

Water Conveyance Agreements–CVP Water

The Department regularly enters into agreements to convey CVP water, such as agreements with contractors receiving water from the U.S. Bureau of Reclamation through the Cross Valley Canal, a water

conveyance facility that connects with the California Aqueduct near Tupman in Kern County. Other agencies or corporations, including the U.S. Department of Veterans Affairs, U.S. Fish and Wildlife Service, and Musco Olive Products, Inc., also receive CVP water through agreements between the Department and USBR.

Cross Valley Canal. The eight, three-party Cross Valley Canal contracts for conveyance of CVP water through the California Aqueduct—executed in 1975 and 1976—among the Department, the U.S. Bureau of Reclamation, 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, expired on December 31, 1995. However, on December 28, 1995, all eight contracts were amended to extend their expiration date to February 29, 1996. On February 29, 1996, the Department, USBR, and the eight CVC contractors signed interim renewal contracts. These interim contracts will be in effect until February 28, 1998. The contracts may be extended, first, for 1 year and then, for successive terms of 2 years until the appropriate environmental review for the pertinent long-term renewal contracts is completed. When all the appropriate environmental review is completed, 25-year contracts will be negotiated upon request of the CVC contractors. The Department agreed to convey up to 128,300 acre-feet of CVP water under those contracts.

Musco Olive Products, Inc. An annual agreement dated April 16, 1996, between the Department and USBR provides for the conveyance of up to 300 acre-feet of CVP water to Reach 2A of the California Aqueduct for use by Musco Olive Products, Inc. This water is to be conveyed from March 1, 1996, through December 31, 1996.

U.S. Department of Veterans Affairs. An annual agreement dated April 16, 1996, between the Department and USBR approved the conveyance of up to 450 acre-feet of CVP water to Reach 2B of the California Aqueduct for use by the U.S. Department of Veterans Affairs San Joaquin Valley National Cemetery. The water is to be conveyed from January 1, 1996, through December 31, 1996.

U.S. Fish and Wildlife Service Cooperative Agreement. USBR initiated a cooperative agreement with the Department to deliver CVP water to the Kern National Wildlife Refuge for USFWS. Under the terms of this cooperative agreement, dated September 9, 1994, up to 26,530 acre-feet of CVP water would be delivered from Check 21 to the Buena Vista Water Storage District Turnout BV-1B, on Reach 10A of the California Aqueduct, from October 1, 1993, through April 10, 1995. Since the cooperative agreement was signed, four 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, on 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, executed May 10, 1995, defined the water delivery rates for calendar year 1995 and specified that those rates will be adjusted annually. Modification No. 004, executed March 7, 1996, incorporated water delivery rates for calendar year 1996.

Other Agreements

Last Chance Creek Water District. On June 6, 1996, the Department and LCCWD signed a contract providing for a continuing water supply for LCCWD from Frenchman Lake through December 31, 2000. Since 1962, the Department has provided continuous water service to LCCWD from Frenchman Lake through a series of short-term agreements.

Westlands Water District–Kings River Water. An agreement dated May 17, 1996, between the Department and WWD approved delivery to WWD of up to 10,000 acre-feet of Kings River water from the Mendota Pool through reaches 4 through 7 of the California Aqueduct. This non-SWP water was made available to WWD through an agreement between

WWD and the Kings River Water Association. The water was released from Pine Flat Reservoir and flowed to the Mendota Pool via the Kings River and Fresno Slough. WWD then conveyed the water from the Mendota Pool to the California Aqueduct through WWD Lateral 7. During May 1996, 955 acre-feet of Kings River water were conveyed to WWD. This agreement expired June 30, 1996.

Turnout Agreements

San Francisco. The City and County of San Francisco has two turnouts for unforeseen emergency water needs on the South Bay Aqueduct. The San Antonio turnout, constructed in 1990, has a 75-cfs capacity and the Sunol temporary turnout, constructed in 1991, has a 35-cfs capacity. The agreement for maintenance and operation of the San Antontio turnout was signed June 8, 1995, and terminates April 19, 1999. The Sunol temporary turnout agreement for construction, operation, and maintenance was signed August 22, 1991, and a fourth amendment was executed on February 14, 1996, which extends the agreement to August 1, 1996. A long-term Sunol agreement similar to the San Antonio agreement is being negotiated between the Department and San Francisco.

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 1995, 2,972,500 acre-feet of water were conveyed to 25 long-term contractors and 15 other agencies. That amount includes 2,031,423 acre-feet of entitlement[1] and 2,575 acre-feet of entitlement- related (recreation/fish and wildlife) water. It also includes 15,589 acre-feet of operational flood release water as well as 922,913 acre-feet of nonentitlement water delivered to satisfy agreements made with SWP contractors and other agencies, including USBR. Figure 10-1 shows amounts of water delivered to various locations during 1995.

Specific information about water deliveries made to long-term contractors and other agencies during 1995 and historical deliveries from 1962 through 1995 is presented in the following three sections, each with a corresponding table:

- water delivered and future credits granted to long-term contractors in 1995 (Table 10-3);
- water delivered in 1995, by month (Table 10-4); and
- annual water entitlements and water conveyed, by water type, from 1962 through 1995 (Table 10-5).

Water Deliveries and Credits to Long-Term SWP Contractors

Table 10-3 shows amounts of water delivered in 1995 and future entitlement credits granted to long-term contractors through 1995. The following information about specific columns in Table 10-3 is arranged by column number.

1995 Entitlement Water Delivered. Columns 1 through 4 show a detailed breakdown of current- year entitlement water delivered to long-term water supply contractors in 1995.

1995 Interruptible Water. Column 5 shows 64,330 acre-feet of 1995 Interruptible Water delivered to long-term water supply contractors in 1995.

1994 Carryover Entitlement Water Delivered During 1995. 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 that the SWP delivered 53,001 acre-feet of entitlement water carried over from 1994 to six contractors.

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

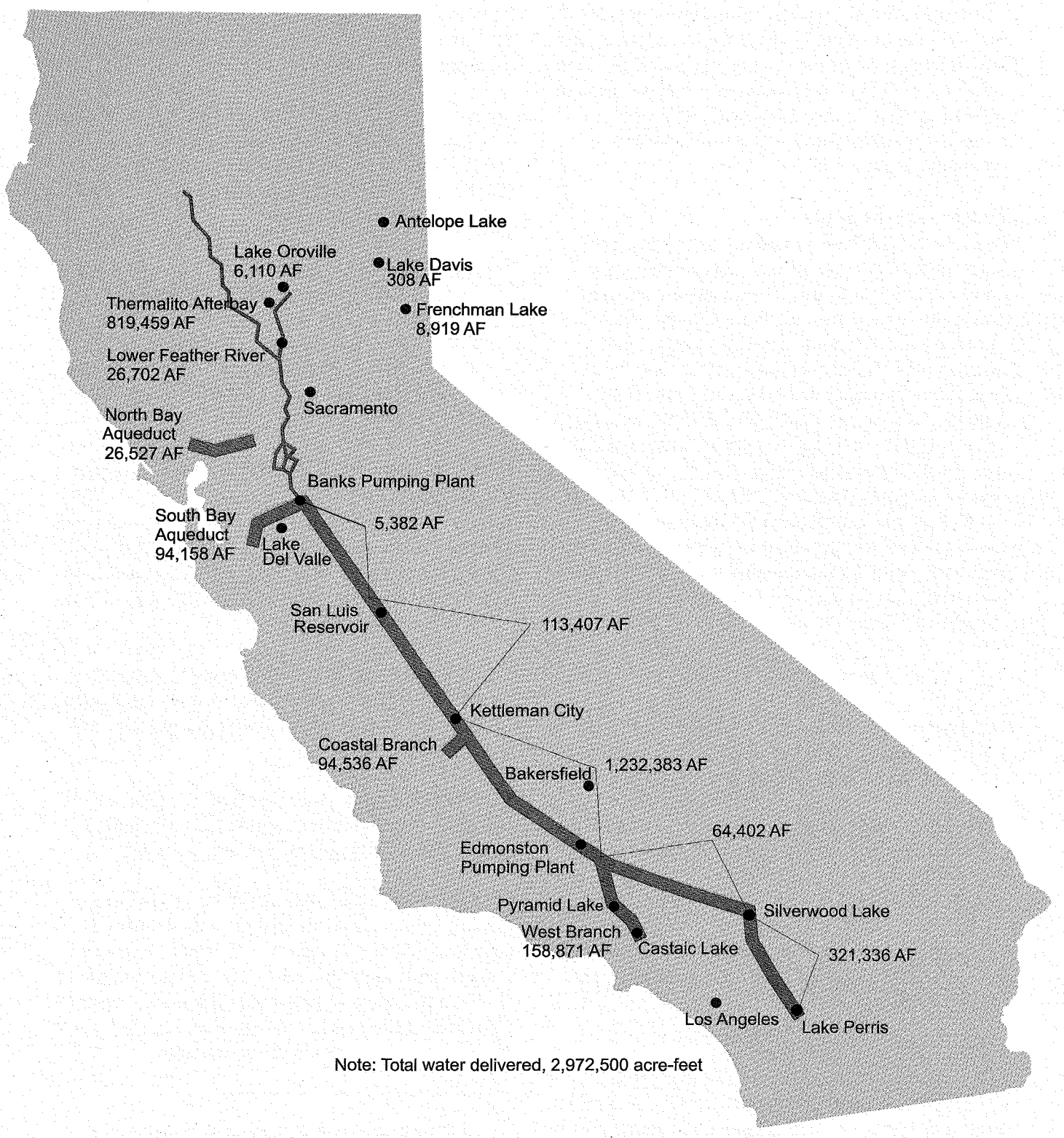


Figure 10-1
Water Delivered in Calendar Year 1995 and Delivery Locations

Table 10-3
Water Delivered in 1995 and Credits Granted to Long-Term Contractors through 1995, by Service Area
(Acre-Feet)

Water Contractor or Agency	Water Deliveries in 1995: Entitlement Water Deliveries: 1995 Entitlements without Transfers, Exchanges, & Storage (1)	1995 Entitlements Delivered thru Transfers & Exchanges (2)	1995 Entitlement Delivered to Storage (3)	Total 1995 Entitlement Delivered (4)	1995 Interruptible Entitlement (5)	1994 Entitlement Delivered During 1995 (6)	Make-up Water per Article 12(d) (7)	Make-Up Water per Article 14(b) (8)	Total Entitlement (9)	Other Water Deliveries (a (10)	Total Deliveries (11)	Future Entitlement Credits as of January 1, 1996: Wet-Weather Water per Articles 7 or 45 (12)	1995 Carryover Approved for Delivery in 1996 (13)	Entitlement Total Delivery Credit (14)	Future Entitlement Reduction Credit per Art. 7 or 45 (15)
Upper Feather River Area															
City of Yuba City	910			910					910		910			0	
County of Butte	203			203					203		203			0	
Plumas County Flood Control and Water Conservation District	308			308					308		308			0	
North Bay Area															
Napa County Flood Control and Water Conservation District	5,182			5,182					5,182		5,182			0	
Solano County Water Agency	21,345			21,345					21,345		21,345		855	855	
South Bay Area															
Alameda County Flood Control and Water Conservation District, Zone 7	30,091			30,091					30,091	12,080	42,171	123,499		123,499	
Alameda County Water District	17,793			17,793					17,783	5,292	23,085			0	
Santa Clara Valley Water District	28,756			28,756					28,756		28,756		1,021	1,021	
San Joaquin Valley Area															
Castaic Lake Water Agency	9,486			9,486					9,486		9,486			0	
County of Kings	4,000			4,000					4,000		4,000			0	
Dudley Ridge Water District	43,254	245		43,499		1,986			45,485		45,485			0	
Empire West Side Irrigation District	957			957	106	568			1,631		1,631		497	497	
Kern County Water Agency	986,640			986,640	59,671	7,295			1,053,600	13,117	1,066,723		59,623	59,623	
Oak Flat Water District	5,169			5,169					5,169		5,169			0	2,466
Tulare Lake Basin Water Storage District	71,679	41,500		113,179	4,553	22,137			139,869		139,869		38,570	38,570	
Central Coastal Area															
San Luis Obispo County Flood Control and Water Conservation District	0			0					0		0			0	
Santa Barbara County Flood Control and Water Conservation District	0			0					0		0			0	
Southern California Area															
Antelope Valley-East Kern Water Agency	47,286	1,227		48,513					48,513		48,513			0	
Castaic Lake Water Agency	16,174			16,174		1,573			17,747		17,747			0	
Coachella Valley Water District	23,100			23,100					23,100		23,100			0	
Crestline-Lake Arrowhead Water Agency	409			409					409	475	884			0	
Desert Water Agency	38,100			38,100					38,100		38,100			0	
Littlerock Creek Irrigation District	480			480					480		480			0	
Metropolitan Water District of Southern California	346,600	4,063	50,000	400,663		19,442		20,000	440,105		440,105		40,121	40,121	
Mojave Water Agency	2,495			2,495				5,000	7,495		7,495			0	
Palmdale Water District	6,961			6,961					6,961		6,961			0	
San Bernardino Valley Municipal Water District	696			696					696		696			0	
San Gabriel Valley Municipal Water District	8,859			8,859					8,859		8,859			0	
San Gorgonio Pass Water Agency	0			0					0		0			0	
Ventura County Flood Control District	0			0					0		0			0	
Subtotal	**1,716,933**	**47,035**	**50,000**	**1,813,968**	**64,330**	**53,001**	**0**	**25,000**	**1,956,299**	**30,964**	**1,987,263**	**123,499**	**140,687**	**264,186**	**2,466**
Westlands Water District (b		75,124		75,124					75,124		75,124				
Total	**1,716,933**	**122,159**	**50,000**	**1,889,092**	**64,330**	**53,001**	**0**	**25,000**	**2,031,423**	**30,964**	**2,062,387**	**123,499**	**140,687**	**264,186**	**2,466**

a) Includes local, general wheeling, and operational flood release water.
b) Includes the following: 14,446 acre-feet transferred from Dudley Ridge Water District; 49,803 acre-feet transferred from Kern County Water Agency; and 10,875 acre-feet exchanged with Kern County Water Agency.

Table 10-4
Water Delivered in 1995, by Month
(Acre-feet)

Contracting Agency and Type of Service	Month												1995 Total Deliveries	1995 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	430	480	0	0	0	0	910	9,600
County of Butte														
Entitlement water	27	2	3	1	9	40	0	0	0	0	1	120	203	1,200
Plumas County Flood Control and Water Conservation District														
Entitlement water	5	2	2	1	7	37	74	87	62	21	9	1	308	1,250
Last Chance Creek Water District	0	0	0	0	0	0	1,134	4,865	2,344	576	0	0	8,919	
Thermalito Irrigation District														
Regulated delivery of local supply	65	44	39	33	151	290	395	405	324	286	183	106	2,321	
Oroville-Wyandotte Irrigation District														
Regulated delivery of local supply	13	90	34	152	197	866	1,030	1,050	1,030	839	508	301	6,110	
Western Canal Water District														
Regulated delivery of local supply	241	0	0	1,071	17,241	30,390	51,898	47,788	18,263	20,290	23,702	9,951	220,835	
Joint Water Districts Board	7,090	0	0	4,310	83,302	96,753	119,095	110,549	63,091	30,430	45,240	36,300	596,100	
Oswald Water District														
Regulated delivery of local supply	0	0	0	0	0	176	308	100	185	10	9	0	788	
Tudor Mutual Water Company														
Regulated delivery of local supply	0	0	0	0	0	806	1,092	298	389	36	0	0	2,621	
Garden Highway Water Company														
Regulated delivery of local supply	0	0	0	0	2,666	2,682	3,575	3,189	1,733	896	0	0	14,741	
Plumas Mutual Water Company														
Regulated delivery of local supply	0	0	0	0	250	2,404	1,952	1,424	1,307	305	0	0	7,642	
SWP	32	4	5	2	16	77	504	567	62	21	10	121	1,421	12,050
Non-SWP	7,409	134	73	5,566	103,807	134,367	180,479	169,668	88,666	53,668	69,642	46,598	860,077	
Area Total	**7,441**	**138**	**78**	**5,568**	**103,823**	**134,444**	**180,983**	**170,235**	**88,728**	**53,689**	**69,652**	**46,719**	**861,498**	**12,050**
North Bay Area														
Napa County Flood Control and Water Conservation District														
Entitlement water	599	663	376	134	398	280	200	256	671	908	590	107	5,182	9,780
Interruptible entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	
Agency Total	599	663	376	134	398	280	200	256	671	908	590	107	5,182	
Solano County Water Agency														
Entitlement water	619	98	459	851	329	321	1,259	559	322	285	198	152	5,452	34,250
Interruptible entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	
Entitlement water to Benicia	411	151	54	755	123	998	1,535	1,419	1,005	878	854	881	9,064	
Entitlement water to Vallejo	111	359	0	394	266	636	879	1,064	875	811	865	569	6,829	
Agency Total	1,141	608	513	2,000	718	1,955	3,673	3,042	2,202	1,974	1,917	1,602	21,345	
SWP	1,740	1,271	889	2,134	1,116	2,235	3,873	3,298	2,873	2,882	2,507	1,709	26,527	44,030
Area Total	**1,740**	**1,271**	**889**	**2,134**	**1,116**	**2,235**	**3,873**	**3,298**	**2,873**	**2,882**	**2,507**	**1,709**	**26,527**	**44,030**
South Bay Area														
Alameda County Flood Control and Water Conservation District-Zone 7														
Entitlement water	1	1	20	104	1,323	4,020	5,695	5,436	4,149	4,881	3,582	879	30,091	42,000
General wheeling*	0	0	0	0	0	0	0	0	667	0	0	0	667	
Local water*	1,394	1,462	1,497	2,094	1,713	546	74	0	156	72	5	1,070	10,083	
Operational flood release water*	1,288	42	0	0	0	0	0	0	0	0	0	0	1,330	
Agency Total (*excluded water)	1	1	20	104	1,323	4,020	5,695	5,436	4,149	4,881	3,582	879	30,091	
Alameda County Water District														
Entitlement water	0	623	0	698	1,790	2,145	2,350	2,377	1,559	2,319	2,203	1,729	17,793	42,000
Local water*	1,322	532	1,355	941	0	0	0	0	0	0	0	0	4,150	
Operational flood release water*	582	0	560	0	0	0	0	0	0	0	0	0	4,142	
Agency Total (*excluded water)	0	623	0	698	1,790	2,145	2,350	2,377	1,559	2,319	2,203	1,729	17,793	

Table 10-4
Water Delivered in 1995, by Month
(Acre-feet)

Contracting Agency and Type of Service	Month												1995 Total Deliveries	1995 Contract Entitlement
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Santa Clara Valley Water District														
Entitlement Water	637	1,138	1,579	2,476	2,766	3,129	3,423	4,053	4,065	4,102	1,067	321	28,756	100,000
Agency Total	637	1,138	1,579	2,476	2,766	3,129	3,423	4,053	4,065	4,102	1,067	321	28,756	
SWP	638	1,762	1,599	3,278	5,879	9,294	11,468	11,866	9,773	11,302	6,852	2,929	76,640	184,000
Non-SWP	1,394	1,462	1,497	2,094	1,713	546	74	0	823	72	5	1,070	10,750	
Area Total	**2,032**	**3,224**	**3,096**	**5,372**	**7,592**	**9,840**	**11,542**	**11,866**	**10,596**	**11,374**	**6,857**	**3,999**	**87,390**	**184,000**
San Joaquin Valley Area														
SWP Water														
Castaic Lake Water Agency														
Entitlement water	162	1,237	765	152	240	1,325	1,722	2,344	478	0	0	1,061	9,486	
Agency Total	162	1,237	765	152	240	1,325	1,722	2,344	478	0	0	1,061	9,486	
County of Kings														
Entitlement water	0	0	400	0	0	400	400	800	400	400	800	400	4,000	4,000
Agency Total	0	0	400	0	0	400	400	800	400	400	800	400	4,000	
Dudley Ridge Water District														
Entitlement water	400	1,180	365	1,266	2,751	7,636	10,900	11,810	3,610	1,612	679	1,045	43,254	57,700
Carryover entitlement water	1,986	0	0	0	0	0	0	0	0	0	0	0	1,986	
Transfer entitlement water from KCWA	0	0	0	0	0	0	0	0	0	0	0	245	245	
Transfer entitlement water to Westlands*	0	0	0	0	0	0	14,446	0	0	0	0	0	14,446	
Transfer carryover entitlement to KCWA*	1,000	0	0	0	0	0	0	0	0	0	0	0	1,000	
Agency Total (* excluded Transferred Entitlement Water)	2,386	1,180	365	1,266	2,751	7,636	10,900	11,810	3,610	1,612	679	1,290	45,485	
Empire West Side Irrigation District														
Entitlement water	0	0	2	0	0	0	0	0	0	0	304	651	957	3,000
Carryover entitlement water	433	135	0	0	0	0	0	0	0	0	0	0	568	
Interruptible entitlement water	0	0	106	0	0	0	0	0	0	0	0	0	106	
Agency Total	433	135	108	0	0	0	0	0	0	0	304	651	1,631	
Kern County Water Agency														
Entitlement water	12,421	41,421	21,664	36,052	46,395	108,666	195,650	197,078	74,912	73,166	99,822	79,393	986,640	1,153,400
Interruptible entitlement water	4,185	36,516	13,176	5,794	0	0	0	0	0	0	0	0	59,671	
Carryover entitlement water	2,770	25	0	0	0	0	0	0	0	0	0	0	2,795	
Transfer carryover entitlement water from DRWD	1,000	0	0	0	0	0	0	0	0	0	0	0	1,000	
Transfer carryover entitlement water from TLBWSD	1,613	1,887	0	0	0	0	0	0	0	0	0	0	3,500	
Transfer entitlement water to Westlands*	0	0	0	0	0	20,835	6,685	0	0	22,283	0	0	49,803	
Transfer entitlement water to TLBWSD *	0	0	0	0	0	0	0	6,247	9,844	16,642	8,377	390	41,500	
Transfer entitlement water to DRWD*	0	0	0	0	0	0	0	0	0	0	0	245	245	
Exchange entitlement water to Westlands*	0	0	0	0	0	10,875	0	0	0	0	0	0	10,875	
Operational release water *	0	0	13,117	0	0	0	0	0	0	0	0	0	13,117	
Agency Total (*excluded water)	21,989	79,849	34,840	41,846	46,395	108,666	195,650	197,078	74,912	73,166	99,822	79,393	1,053,606	
Oak Flat Water District														
Entitlement water	0	0	1	306	572	893	1,288	907	521	502	139	40	5,169	5,700
Agency Total	0	0	1	306	572	893	1,288	907	521	502	139	40	5,169	
Tulare Lake Basin Water Storage District														
Entitlement water	0	0	450	174	147	462	644	3,251	5,756	3,877	17,472	39,446	71,679	118,500
Interruptible entitlement water	0	0	4,553	0	0	0	0	0	0	0	0	0	4,553	
Carryover entitlement water	9,028	13,109	0	0	0	0	0	0	0	0	0	0	22,137	
Transfer entitlement water from KCWA	0	0	0	0	0	0	0	6,247	9,844	16,642	8,377	390	41,500	
Transfer carryover entitlement water to KCWA	1,613	1,887	0	0	0	0	0	0	0	0	0	0	3,500	
Agency Total (*excluded water)	9,028	13,109	5,003	174	147	462	644	9,498	15,600	20,519	25,849	39,836	139,869	
Westlands Water District														
Transferred entitlement water from DRWD	0	0	0	0	0	0	0	14,446	0	0	0	0	14,446	
Transferred entitlement water from KCWA	0	0	0	0	0	20,835	6,685	0	0	22,283	0	0	49,803	
Exchange entitlement water from KCWA	0	0	0	0	0	10,875	0	0	0	0	0	0	10,875	
General wheeling *	9,838	0	0	0	0	0	0	0	0	0	0	0	9,838	
Local water*	15,098	12,000	0	0	0	0	0	0	0	0	0	0	27,098	
Agency Total (*excluded water)	0	0	0	0	0	20,835	6,685	14,446	0	22,283	0	0	64,249	
Department of Fish & Game														
Recreation Fish & Wildlife	93	15	38	66	10	75	51	75	74	98	76	22	693	
Kings County Water District	0	0	0	0	0	0	0	0	0	0	0	0	0	

Table 10-4
Water Delivered in 1995, by Month
(Acre-feet)

Contracting Agency and Type of Service	Month												1995 Total Deliveries	1995 Contract Entitlement
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Parks and Recreation														
Recreation Fish & Wildlife	1	1	1	5	6	10	9	13	10	5	2	4	67	
Agency Total	94	16	39	71	16	85	60	88	84	103	78	26	760	
SWP	34,092	95,526	41,521	43,815	50,121	151,177	217,349	236,971	95,605	118,585	127,671	122,697	1,335,130	1,342,300
Non-SWP	9,838	0	0	0	0	0	0	0	0	0	0	0	9,838	
Area subtotal (SWP water)	**43,930**	**95,526**	**41,521**	**43,815**	**50,121**	**151,177**	**217,349**	**236,971**	**95,605**	**118,585**	**127,671**	**122,697**	**1,344,968**	**1,342,300**
San Joaquin Valley Area														
CVP Water Conveyed														
Annual Contracts														
Kings County Water District	0	0	0	0	0	0	0	0	0	0	0	0	0	
Lakeside Irrigation Water District	0	0	0	0	0	0	0	0	0	0	0	0	0	
Musco Olive Products, Inc.	18	16	15	14	20	17	12	1	15	31	20	14	193	
Tracy Golf and Country Club	0	0	0	0	0	0	0	0	0	0	0	0	0	
Cawelo Water District	0	0	0	0	0	0	0	0	0	0	0	0	0	
Veterans Administration Cemetery	0	1	1	1	1	4	3	3	2	2	1	1	20	
Subtotal	18	17	16	15	21	21	15	4	17	33	21	15	213	
Cross Valley Canal Contracts														
Fresno County	0	0	0	0	0	0	0	0	0	0	0	0	0	
Lower Tule River Irrigation District	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pixley Irrigation District	0	0	0	0	0	0	0	0	0	0	0	0	0	
Rag Gulch Water District	0	0	0	0	0	0	0	0	0	0	0	0	0	
Tulare County	0	0	0	0	0	0	0	0	0	0	0	0	0	
Kern-Tulare Water District	0	0	0	0	0	0	0	0	0	0	0	0	0	
Hills Valley Irrigation District	0	0	0	0	0	0	0	0	0	0	0	0	0	
Tri-Valley Water District	0	0	0	0	0	0	0	0	0	0	0	0	0	
Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0	
U.S.Bureau of Reclamation														
Federal wheeling (a	1,183	497	0	0	200	0	0	0	1,244	3,663	1,629	1,309	9,725	
Decision 1485 water	0	0	0	0	0	0	0	0	0	0	0	0	0	
Recreation/fish and wildlife water (San Luis)	76	14	32	57	15	34	50	71	69	84	65	20	587	
Subtotal	1,259	497	0	0	200	0	0	0	1,244	3,663	1,629	1,309	9,801	
Non-SWP	1,277	514	16	15	221	21	15	4	1,261	3,696	1,650	1,324	10,014	
Area subtotal (CVP water)	**1,277**	**514**	**16**	**15**	**221**	**21**	**15**	**4**	**1,261**	**3,696**	**1,650**	**1,324**	**10,014**	
Area Summary														
SWP	34,092	95,526	41,521	43,815	50,121	151,177	217,349	236,971	95,605	118,585	127,671	122,697	1,335,130	1,342,300
Non-SWP	11,115	514	16	15	221	21	15	4	1,261	3,696	1,650	1,324	19,852	
Area Total	**45,207**	**96,040**	**41,537**	**43,830**	**50,342**	**151,198**	**217,364**	**236,975**	**96,866**	**122,281**	**129,321**	**124,021**	**1,354,982**	**1,342,300**
Central Coastal Area														
San Luis Obispo County Flood Control and Water Conservation District														
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	25,000
Santa Barbara County Flood Control and Water Conservation District														
Entitlement Water	0	0	0	0	0	0	0	0	0	0	0	0	0	45,486
SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	70,486
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	
Area Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**70,486**

a) Kern National Wildlife Refuge USBR

Table 10-4
Water Delivered in 1995, by Month
(Acre-feet)

Contracting Agency and Type of Service	Month												1995 Total Deliveries	1995 Contract Entitlement
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Southern California Area														
Antelope Valley-East Kern Water Agency														
Entitlement water	1,372	1,593	1,630	3,351	4,736	6,067	7,748	7,832	6,226	2,986	1,716	2,029	47,286	138,400
Transferred entitlement water from Mojave WA	18	78	92	108	79	148	205	160	145	111	40	43	1,227	
Agency Total	1,390	1,671	1,722	3,459	4,815	6,215	7,953	7,992	6,371	3,097	1,756	2,072	48,513	
Castaic Lake Water Agency														
Entitlement water	0	0	1,318	2,018	1,374	1,671	1,930	2,477	2,507	1,654	682	543	16,174	54,200
Carryover entitlement water	980	593	0	0	0	0	0	0	0	0	0	0	1,573	
Agency Total	980	593	1,318	2,018	1,374	1,671	1,930	2,477	2,507	1,654	682	543	17,747	
Coachella Valley Water District														
Entitlement water	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	23,100	23,100
Agency Total	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	1,925	23,100	
Crestline-Lake Arrowhead Water Agency														
Entitlement Water	0	0	0	0	0	0	0	30	125	99	66	89	409	5,800
Local water*	80	37	23	28	38	60	97	112	0	0	0	0	475	
Agency Total (*excluded water)	0	0	0	0	0	0	0	30	125	99	66	89	409	
Desert Water Agency														
Entitlement water	6,384	2,886	2,883	2,883	2,883	2,883	2,883	2,883	2,883	2,883	2,883	2,883	38,100	38,100
Agency Total	6,384	2,886	2,883	2,883	2,883	2,883	2,883	2,883	2,883	2,883	2,883	2,883	38,100	
Littlerock Creek Irrigation District														
Entitlement water	0	0	0	19	74	90	80	101	53	57	6	0	480	2,300
Agency Total	0	0	0	19	74	90	80	101	53	57	6	0	480	
Metropolitan Water District of Southern California														
Entitlement Water	0	0	3,165	32,501	29,353	41,495	56,375	59,951	57,956	22,099	16,559	27,146	346,600	2,011,500
Carryover entitlement water	14,626	4,816	0	0	0	0	0	0	0	0	0	0	19,442	
Stored entitlement water	0	0	0	0	18,500	31,500	0	0	0	0	0	0	50,000	
Article 14(b) M&I water	0	0	0	2,000	2,000	3,000	2,000	3,000	2,000	2,000	2,000	2,000	20,000	
Exchanged entitlement water from San Gabriel VMWD	0	0	0	0	1,354	0	0	0	0	1,113	1,596	0	4,063	
Agency Total	14,626	4,816	3,165	34,501	51,207	75,995	58,375	62,951	59,956	25,212	20,155	29,146	440,105	
Mojave Water Agency														
Entitlement water	0	0	0	0	0	0	0	0	1,037	8	117	1,333	2,495	50,800
Article 14(b) M&I water	277	296	400	661	1,248	659	683	661	115	0	0	0	5,000	
Transferred entitlement water to Antelope Valley-East Kern WA*	18	78	92	108	79	148	205	160	145	111	40	43	1,227	
Agency Total (*excluded water)	277	296	400	661	1,248	659	683	661	1,152	8	117	1,333	7,495	
Palmdale Water District														
Entitlement water	6	9	9	23	411	1,484	1,744	1,781	764	101	22	607	6,961	17,300
Agency Total	6	9	9	23	411	1,484	1,744	1,781	764	101	22	607	6,961	
San Bernardino Valley Municipal Water District														
Entitlement Water	0	0	0	0	26	50	126	88	136	82	122	66	696	102,600
Agency Total	0	0	0	0	26	50	126	88	136	82	122	66	696	
San Gabriel Valley Municipal Water District														
Entitlement water	0	438	0	0	491	1,133	1,715	1,239	1,081	1,004	1,114	644	8,859	28,800
Exchanged entitlement water to Metropolitan Water District*	0	0	0	0	1,354	0	0	0	0	1,113	1,596	0	4,063	
Agency Total (*excluded water)	0	438	0	0	491	1,133	1,715	1,239	1,081	1,004	1,114	644	8,859	
San Gorgonio Pass Water Agency														
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	17,300
Ventura County Flood Control District														
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	20,000

Table 10-4
Water Delivered in 1995, by Month
(Acre-feet)

Contracting Agency and Type of Service	Month												1995 Total Deliveries	1995 Contract Entitlement
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
LADWP														
Local water in	0	0	0	(1,479)	0	0	0	0	0	0	0	0	(1,479)	
Local water out	0	0	0	1,479	0	0	0	0	0	0	0	0	1,479	
Agency Total	0	0	0	0	0	0	0	0	0	0	0	0	0	
Recreation/fish and wildlife water														
Agency Total	74	47	39	118	142	207	262	290	222	224	118	72	1,815	
SWP	23,150	10,583	11,811	75,514	90,975	130,471	130,401	138,114	130,819	55,010	43,201	64,364	903,413	2,510,200
Non-SWP	80	37	23	28	38	60	97	112	0	0	0	0	475	
Area Total	**23,230**	**10,620**	**11,834**	**74,512**	**91,013**	**130,531**	**130,498**	**138,226**	**130,819**	**55,010**	**43,201**	**64,364**	**903,888**	**2,510,200**
All Agencies														
Total 1995 agriculture and M&I entitlement water	24,558	53,216	37,016	84,935	98,000	186,152	298,561	307,745	171,198	124,971	152,078	162,610	1,701,040	
Total interruptible entitlement water	4,185	36,516	17,835	5,794	0	0	0	0	0	0	0	0	64,330	
Total carryover entitlement water (b	32,436	20,565	0	0	0	0	0	0	0	0	0	0	53,001	
Total transferred entitlement water (c	18	78	92	108	79	20,983	6,890	20,853	9,989	39,036	8,417	678	107,221	
Total exchanged entitlement water	0	0	0	0	1,354	10,875	0	0	0	1,113	1,596	0	14,938	
Total stored entitlement water	0	0	0	0	18,500	31,500	0	0	0	0	0	0	50,000	
Benicia entitlement water	411	151	54	755	123	998	1,535	1,419	1,005	878	854	881	9,064	
Vallejo entitlement water	111	359	0	394	266	636	879	1,064	875	811	865	569	6,829	
Article 14(b) entitlement water	277	296	400	2,661	3,248	3,659	2,683	3,661	2,115	2,000	2,000	2,000	25,000	
Subtotal (Entitlement water delivered)	**61,996**	**111,181**	**55,397**	**94,647**	**121,570**	**254,803**	**310,548**	**334,742**	**185,182**	**168,809**	**165,810**	**166,738**	**2,031,423**	
Recreation/fish and wildlife water	168	63	78	189	158	292	322	378	306	327	196	98	2,575	
Operational release water	1,870	42	13,677	0	0	0	0	0	0	0	0	0	15,589	
Subtotal (SWP water)	**64,034**	**111,286**	**69,152**	**94,836**	**121,728**	**255,095**	**310,870**	**335,120**	**185,488**	**169,136**	**166,006**	**166,836**	**2,049,587**	
Wheeling local water	25,303	14,165	2,948	8,629	105,558	134,973	180,650	169,780	88,822	53,740	69,647	47,668	901,883	901,884
General wheeling	9,838	0	0	0	0	0	0	0	667	0	0	0	10,505	
Conveying CVP water Annual Contract	18	17	16	15	21	21	15	4	17	33	21	15	213	
Conveying CVP water (Kern National Wildlife Refuge USBR)	1,183	497	0	0	200	0	0	0	1,244	3,663	1,629	1,309	9,725	
Conveying CVP water Cross Valley Canal	0	0	0	0	0	0	0	0	0	0	0	0	0	
Conveying CVP water Decision 1485	0	0	0	0	0	0	0	0	0	0	0	0	0	
Conveying CVP water recreation/fish & wildlife water (San Luis)	76	14	32	57	15	34	50	71	69	84	65	20	587	
Subtotal (other water)	**36,418**	**14,693**	**2,996**	**8,701**	**105,794**	**135,028**	**180,715**	**169,855**	**90,819**	**57,520**	**71,362**	**49,012**	**922,913**	
Grand total	**100,452**	**125,979**	**72,148**	**103,537**	**227,522**	**390,123**	**491,585**	**504,975**	**276,307**	**226,656**	**237,368**	**215,908**	**2,972,500**	**4,163,066**

b) Includes 4,500 acre-feet of 1994 carryover water transferred to KCWA from TLBWSD and DRWD.
c) Does not include 4,500 acre-feet of 1994 carryover water transferred to KCWA from TLBWSD and DRWD.

Table 10-5
Total Amounts of Annual Water Entitlements and Water Conveyed, by Type, 1962 through 1995
(Acre-Feet)

	Annual Entitlements According to Long-Term Water Supply Contracts							Water Conveyed								
								Deliveries								
Year	Upper Feather River Area (1)	North Bay Area (2)	South Bay Area (3)	San Joaquin Valley Area (4)	Central Coastal Area (5)	Southern California Area (6)	Total (7)	Entitlement Water (8)	Surplus and Unscheduled Water (a (9)	Other Water (b (10)	Feather River Diversions (c (11)	Recreation Water (12)	Subtotal (13)	Initial Fill Water (14)	Operational Losses and Storage Charges (d (15)	Total (16)
1962	0	0	0	0	0	0	0	0	0	18,289		0	18,289	9	272	18,570
1963	0	0	0	0	0	0	0	0	0	22,456		0	22,456	71	185	22,712
1964	0	0	0	0	0	0	0	0	0	32,507		0	32,507	171	152	32,830
1965	0	0	0	0	0	0	0	0	0	44,105		0	44,105	93	729	44,927
1966	0	0	0	0	0	0	0	0	0	67,928		0	67,928	0	1,746	69,674
1967	0	0	11,538	0	0	0	11,538	11,538	0	53,605		0	65,143	8,328	4,212	77,683
1968	550	0	109,900	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 (e	36,620 (f	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 (g	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 (h	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 (i	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 (j	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 (k	3,521	551,051	565,395	4,879	1,673,959	0	167,435	1,841,394
1992	11,920	32,010	171,900	1,342,300	70,486	2,510,200	4,138,816	1,471,454 (l	1,156	144,789	613,978	2,605	2,233,982	0	(63,541)	2,170,441
1993	11,960	34,620	177,400	1,342,300	70,486	2,510,200	4,146,966	2,315,235	0	254,854	822,589	2,609	3,395,287	0	726,123	4,121,410
1994	12,000	37,215	182,000	1,342,300	70,486	2,510,200	4,154,201	1,861,976	0	236,739	874,018	8,200	2,980,933	0	(295,405)	2,685,528
1995	12,050	44,030	184,000	1,342,300	70,486	2,510,200	4,163,066	2,031,423	0	78,425	860,077	2,575	2,972,500	0	69,536	3,042,036
Total	116,390	253,941	3,946,638	23,443,674	639,054	39,177,147	67,576,844	39,565,827	5,898,105	6,078,207	22,444,244	104,538	74,090,921	1,833,697	(181,314)	75,743,304

a) Values include amounts of deliveries to short-term contractors (Mustang Water District, 1970-72; Tracy Golf and Country Club, 1974, 1979, and 1980; Green Valley Water District, 1974, 1975, 1978, 1979, 1980, and 1985; and Granite Construction Company, 1980).
b) Includes amounts of SWP and non-SWP water conveyed for SWP and non-SWP contractors.
c) Includes amounts of water diverted under various water rights agreements.
d) Amounts reflect net effect of (1) operational losses from SWP transportation facilities; (2) changes in reservoir storage south of the Delta; (3) storable local inflows to SWP reservoirs; (4) side inflow to San Luis Canal; and (5) inflow into California Aqueduct from Kern River Intertie.
e) Includes 37,170 acre-feet of entitlement water carried over from 1985.
f) Includes 12,270 acre-feet of surplus water carried over from 1985.
g) Includes 639 acre-feet of 1988 entitlement water delivered during 1987 and 16,171 acre-feet of entitlement water recaptured from groundwater storage.
h) Includes 67,581 acre-feet of 1987 entitlement water delivered in 1988 and 8,749 acre-feet recaptured from groundwater storage.
i) Includes 149,880 acre-feet of 1988 entitlement water delivered in 1989 and 89 acre-feet of 1990 entitlement water delivered during 1989.
j) Includes 128,546 acre-feet of 1989 water delivered in 1990.
k) Includes 27,075 acre-feet of 1990 entitlement water and 148 acre-feet of 1992 entitlement water delivered in 1991.
l) Includes 92,282 acre-feet of 1991 entitlement water delivered in 1992; 3,484 acre-feet of make-up water; and 72,000 acre-feet recaptured from groundwater storage (including 57,171 acre-feet of Groundwater Demonstration Program water).

Article 12(d) Water. No article 12(d) water was delivered in 1995. (See column 7).

Article 14(b) Water. In 1995, the SWP delivered 25,000 acre-feet of Article 14(b) water to MWD and MWA. (See column 8).

Total Entitlement Water Delivered. Column 9 shows all entitlement water delivered in 1995, a total of 2,031,423 acre-feet. This amount includes 75,124 acre-feet of entitlement water transferred to or exchanged with Westlands.

Other Water Deliveries. Column 10 includes deliveries of water other than entitlement water, such as deliveries of nonproject water, to long-term water contractors. Nonproject water is generally defined as water purchased from 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 1995, other water deliveries totaled 30,964 acre-feet.

Total Deliveries. Column 11 shows total amounts of water delivered to long-term contractors. In 1995, the SWP delivered 2,062,387 acre-feet to 25 long-term contractors. This amount included 2,031,423 acre-feet of entitlement water and 30,964 acre-feet of other SWP and nonproject water.

Wet-Weather Water. According to provisions of their water supply contracts, South Bay and certain San Joaquin Valley contractors may reduce deliveries of entitlement water in years when above-average amounts of local water are available; they may request increased deliveries by an equal amount in later years. Column 12 shows that the Alameda County Flood Control and Water Conservation District-Zone 7 acquired 11,919 acre-feet of wet-weather water credit in 1995 for a total of 123,499 acre-feet of credits.

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. Because operational constraints may change from year to year, the Department prepares an agreement that lists the conditions of carryover water delivery for a given year. The agreement is signed by participating contractors.

Column 13 shows that the Department approved 1995 carryover water for delivery in 1996. Amounts approved/delivered are as follows:

- SCFCWCD, 13,669/855 acre-feet;
- SCVWD, 21,244/1,021 acre-feet;
- OFWD, 531/0 acre-feet;
- KCWA, 64,295/59,623 acre-feet;
- TLBWSD, 46,821/38,570 acre-feet; and
- MWD, 100,000/40,121 acre-feet.

Total Delivery Credits. Column 14 shows total future entitlement credits according to Article 7 of the long-term water supply contract for specific agencies. On January 1, 1995, the total amount of credits was 264,186 acre-feet, including 123,499 acre-feet of wet-weather water and 2,466 acre-feet of 1994 carryover water.

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

Contractors who increased their allocation of entitlement water in previous years may in any 1 year reduce their supply by the amount the supply had been increased previously. Column 15 shows those credits. Oak Flat Water District has 2,466 acre-feet of future reduction credits available according to Article 45. At this time no other contractors have reduction credit balances.

Water Delivered in 1995, by Month

During 1995, the SWP provided water service to 40 agencies, including 25 long-term water contractors.

Those agencies and the amounts of water delivered to them by month are listed in Table 10-4.

This section and the accompanying table summarize water deliveries for 1995. 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 (1995)
interruptible entitlement (1995)
Article 14(b) make-up entitlement water
carry-over entitlement (1994)
bypass entitlement (1995)
stored entitlement (1995)

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 1995, SWP water was delivered in the following classifications and amounts.

Entitlement Water

A total of 2,031,423 acre-feet of 1995 entitlement water was delivered to 25 long-term contractors.

Transfers and Exchanges of Entitlement Water. During 1995, a total of 111,721 acre-feet of entitlement water was transferred between five SWP long-term contractors and one non-SWP water agency as follows:

- KCWA to DRWD, 245 acre-feet;
- KCWA to TLBWSD, 41,500 acre-feet;
- KCWA to WWD, 49,803 acre-feet;
- MWA to Antelope Valley-East Kern Water Agency, 1,227 acre-feet;
- DRWD to KCWA, 1,000 acre-feet;
- DRWD to WWD, 14,446 acre-feet; and
- TLBWSD to KCWA, 3,500 acre-feet.

During 1995, a total of 14,938 acre-feet of entitlement water was exchanged between three SWP long-term contractors and one non-SWP water agency as follows:

- KCWA to WWD, 10,875 acre-feet; and
- SGVMWD to MWD, 4,063 acre-feet.

Carryover Entitlement Water. In 1995, SWP delivered 53,001 acre-feet of 1994 carryover entitlement water to DRWD, EWSID, KCWA, TLBWSD, Castaic Lake Water Agency, and MWD. TLBWSD transferred 3,500 acre-feet and DRWD transferred 1,000 acre-feet of carryover water to KCWA.

Article 14(b) Water. In 1995, the SWP delivered 20,000 acre-feet of Article 14(b) water to MWD and 5,000 acre-feet to MWA.

Interruptible Entitlement Water. The interruptible entitlement water program allows a contractor to take delivery of entitlement 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 1995, three contractors participated in the program. A total of 64,330 acre-feet of interruptible water was delivered to EWSID, KCWA, and TLBWSD.

Water for Recreation and Fish and Wildlife. A total of 2,575 acre-feet of SWP water was conveyed for recreational use and enhancement of fish and wildlife.

Recreational Use. The SWP delivered 573 acre-feet of water for facilities at Lake Del Valle, O'Neill Forebay, Silverwood Lake, Lake Perris, and Castaic Lake. In addition, 1,223 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 19 acre-feet of water to maintain a trout fishery in Piru Creek as a condition of obtaining a license from the Federal Energy Regulatory Commission to develop a power plant at Pyramid Lake.

Wildlife Management. The SWP delivered 718 acre-feet of water to use in managing wildlife in the Pilibos Wildlife Area, 40 miles south of Los Banos, and on about 770 acres of land near O'Neill Forebay.

The SWP delivered 42 acre-feet of water for the Gamebird Heritage Program at the KFE property on behalf of the Department of Fish and Game.

Operational Flood Release Water. In March 1995, the California Aqueduct was inundated by flood flows in the Arroyo Pasajero area (Reach 6, milepost 152). In response, the Department requested nearby SWP contractors to divert these flows to their service areas to reduce damage to the aqueduct. KCWA diverted 13,117 acre-feet of operational flood release water from reaches 10A, 12E, and 13B. The Department and the Corps of Engineers are currently investigating various flood control alternatives.

In January, February, and March of 1995, Operational Flood Release Water was diverted from the South Bay Aqueduct to protect Lake Del Valle. Alameda County Flood Control and Water Conservation District-Zone 7 diverted 1,288 acre-feet in January and 42 acre-feet in February from Reach 5, and Alameda County Water District diverted 582 acre-feet in January and 560 acre-feet in March from Reach 7. A total of 15,589 acre-feet of Operational Food Release Water was diverted from the SWP to three contractors in 1995.

Nonproject Water. In 1995, 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. The Department used SWP facilities to convey CVP water; water exchanged between KCWA and Tulare Irrigation District; water transferred from Byron-Bethany Irrigation District to ACFC-WCD-Zone 7; water rights water; water acquired by WWD from Kings River Water Association and Merced Irrigation District; and water pumped into the California Aqueduct by WWD for delivery within WWD at a different location. Detailed information concerning those conveyances follow.

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 1995. The Department conveyed this water in September directly from the Delta to Reach 6B 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 1995, the Department conveyed 10,525 acre-feet of CVP water through SWP facilities. Conveyance was made in accordance with agreements negotiated with USBR as follows:

Musco Olive Products, Incorporated. In accordance with terms of two conveyance agreements with the USBR dated May 9, 1995, and April 16, 1996, the Department conveyed 193 acre-feet of CVP water to Reach 2A of the California Aqueduct for Musco Olive Products, Inc.

U.S. Fish and Wildlife Service. The Department conveyed 9,725 acre-feet of CVP water for the USFWS according to provisions of a 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.

Recreational and Wildlife Use. In 1995, the Department conveyed 587 acre-feet of CVP water to the Department of Fish and Game at O'Neill Forebay and Lateral 7.

U.S. Department of Veterans Affairs. Under an annual agreement with the USBR dated May 9, 1995, the Department conveyed 20 acre-feet through SWP facilities to maintain the San Joaquin Valley National Cemetery near Santa Nella, California. Deliveries

were made through Reach 2B of the California Aqueduct.

Westlands Water District-Merced Irrigation District. Under a contract executed February 1, 1995, but made effective October 6, 1994, the Department agreed to convey up to 13,500 acre-feet of water for WWD from MID from October 9, 1994, through March 31, 1995, either directly from the Delta or from the Department's share of storage in San Luis Reservoir. The water was not delivered directly from the Delta but was pumped into the Department's share of storage in San Luis Reservoir. During December 1994, 3,392 acre-feet of stored water was released from San Luis Reservoir and delivered to WWD. In January 1995, the remaining 9,838 acre-feet of water was released from San Luis storage for delivery to WWD through reaches 4 and 5 of the California Aqueduct.

Westlands Water District-"Turn-In" Agreements. In August 1994, the Department signed two "turn-in" agreements with WWD. Under the terms of the first agreement, WWD would pump up to 100,000 acre-feet of groundwater directly into the California Aqueduct from WWD wells located along the aqueduct. Under the second agreement, WWD would pump up to 50,000 acre-feet of groundwater into the Mendota Pool for conveyance to the California Aqueduct through WWD's Lateral 7. During 1994, 96,500 acre-feet of groundwater was pumped under both agreements. Of this amount, 69,400 acre-feet was taken by WWD as direct delivery and 27,100 acre-feet was placed into storage in San Luis Reservoir by exchange. In 1995, during January and February, a total of 4,000 acre-feet of pumped groundwater was taken by WWD as direct delivery and 27,100 acre-feet was released from San Luis Reservoir storage for delivery to WWD in aqueduct reaches 4 through 7.

Westlands Water District-Kings River. An agreement dated May 25, 1995, between the Department and WWD approved the acceptance into the California Aqueduct of up to 10,000 acre-feet of Kings River Water from the Mendota Pool for conveyance to WWD through reaches 5, 6, and 7 of the California Aqueduct. The non-SWP water was delivered from the Mendota Pool to the aqueduct through WWD's Lateral 7. The agreement was effective from April through July 1995. During this period 3,132 acre-feet of Kings River water was conveyed to WWD.

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 1995, 874,845 acre-feet of water in this category were delivered to the Feather River, North Bay, South Bay, and Southern California areas.

Feather River Area. Nine nonproject agencies in the Feather River area received 860,077 acre-feet. Those agencies are Last Chance Creek Water District (8,919 acre-feet), Thermalito Irrigation District (2,321 acre-feet), Oroville-Wyandotte Irrigation District (6,110 acre-feet), Western Canal Water District (220,835 acre-feet), Joint Water District Board (596,100 acre-feet), Tudor Mutual Water Company (2,621 acre-feet), Oswald Water District (788 acre-feet), Garden Highway Water Company (14,741 acre-feet), and Plumas Mutual Water Company (7,642 acre-feet).

North Bay Area. In the North Bay area, the Department delivers water as Vallejo permit water to SCWA. The city of Vallejo, as a member agency, has contractual rights to extra capacity in the North Bay Aqueduct to transport this water. In 1995, no water was delivered under this classification.

South Bay Area. In the South Bay area, 14,233 acre-feet of local water was delivered to two South Bay Aqueduct contractors. ACFCWCD-Zone 7 and ACWD hold water rights to runoff from the Lake Del Valle watershed.

Southern California. In Southern California, 475 acre-feet of local runoff from the Houston Creek watershed were stored and delivered to Crestline-Lake Arrowhead Water Agency. 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 Crestline-Lake Arrowhead Water Agency.

Annual Water Entitlements and Water Delivered Since 1962

Information about annual water entitlements and water conveyed for the past 34 years is contained in Table 10-5. The following discussion of entitlements and water conveyed is arranged according to column numbers.

Annual Entitlements. Columns 1 through 7 of Table 10-5 show the amount of the long-term contractor's entitlement water by area for years 1962 through 1995 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 1995. In 1995, entitlement water delivered to 25 contractors totaled 2,031,423 acre-feet. That amount includes 64,330 acre-feet of 1995 interruptible entitlement water.

Surplus and Unscheduled Water. Surplus 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 1995. During 1993 through 1995, surplus and unscheduled water were not delivered.

Other Water. Column 10 includes amounts of water classified as other water delivered in 1995, including nonproject water conveyed through SWP facilities and regulated delivery of local supply.

In 1995, a total of 78,425 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 1995, a total of 860,077 acre-feet in this category was delivered to contractors 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 1995, a total of 2,575 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.

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 1995, that amount totaled 69,536 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 11
Power Resources

Close-up of a 54-inch butterfly valve at Devil Canyon Powerplant

Significant Events

- State Water Project power facilities generated 4.91 billion kilowatt-hours of energy in 1995. Because of above average rainfall in the Feather River watershed, generation at the Hyatt-Thermalito Complex during 1995 was over twice that of 1994.
- In 1995, the Department purchased 1.54 billion kilowatt-hours of energy at a cost of $19.81 million. Associated costs for capacity, transmission, and dispatching services totaled $32.39 million.
- The Department sold 5.78 billion kilowatt-hours of energy in 1995, resulting in revenues of $70.87 million. The energy was sold to 28 utilities and 5 power brokers in the Southwest, Pacific Northwest, and Northern and Southern California. The Department also received $5.65 million in revenues for capacity payments and transmissions arrangements.

The SWP requires dependable, economical sources of power to deliver affordable water to long-term contractors. Responding to that need, the Department of Water Resources developed and administers a comprehensive power resources program. Key elements of the program include timing generation and pumping schedules strategically, 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 for operating the SWP;
- develop and manage power resources to minimize the cost of water deliveries to SWP contractors;
- minimize impacts on the SWP when major contractual power arrangements begin to expire in 2004;
- meet responsibilities and criteria of the Western Systems Coordinating Council; and
- conform with regulations of the California Energy Commission and the Federal Energy Regulatory Commission.

To achieve these goals, the Department constructed its own power facilities and contracted for long-term power resources with many electric utilities. In addition, the Department arranged for transmission service between SWP power resources and pumping loads and interconnected utilities. The power resources program takes advantage of SWP water storage and conveyance capacities that can allow the Department to operate SWP pumps somewhat independently of water delivery needs. This control of pumping loads and generation enables the Department to enter into advantageous agreements with other electric utilities. Those agreements complement the use of SWP generation to meet SWP power requirements.

Existing SWP Power Facilities

Figure 11-1 shows the names and locations of Department-owned hydroelectric and coal powerplants.

Hydroelectric. Economical hydroelectrical 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 kilowatt-hours in a median water year, while the 3 MW Thermalito Diversion Dam Powerplant adds another 24 million kWh a year.

Generation at existing SWP aqueduct recovery plants—Gianelli, Alamo, Devil Canyon, and Warne—varies with the amount of water conveyed. These four plants generate about one-sixth of the total energy used by the SWP. (Gianelli Pumping-Generating Plant is a joint SWP [222 MW] and U.S. Bureau of Reclamation [202 MW] facility.)

Coal. Since July 1983, the Department has received energy from Reid Gardner Powerplant, a coal-fired facility near Las Vegas, Nevada. Reid Gardner consists of four units. The Department owns 67.8 percent of Unit 4 (169.5 MW based on nameplate capacity of 250 MW), while Nevada Power Company owns the remainder of Unit 4 as well as all of units 1, 2, and 3.

According to the Reid Gardner Unit 4 Participation Agreement, the Department receives up to 245 MW from Unit 4 (based on an upgraded generating capacity of 275 MW) subject to NPC's limited right to interrupt the Department's energy deliveries during specified periods. Whenever NPC interrupts the Department's scheduled energy, the Department

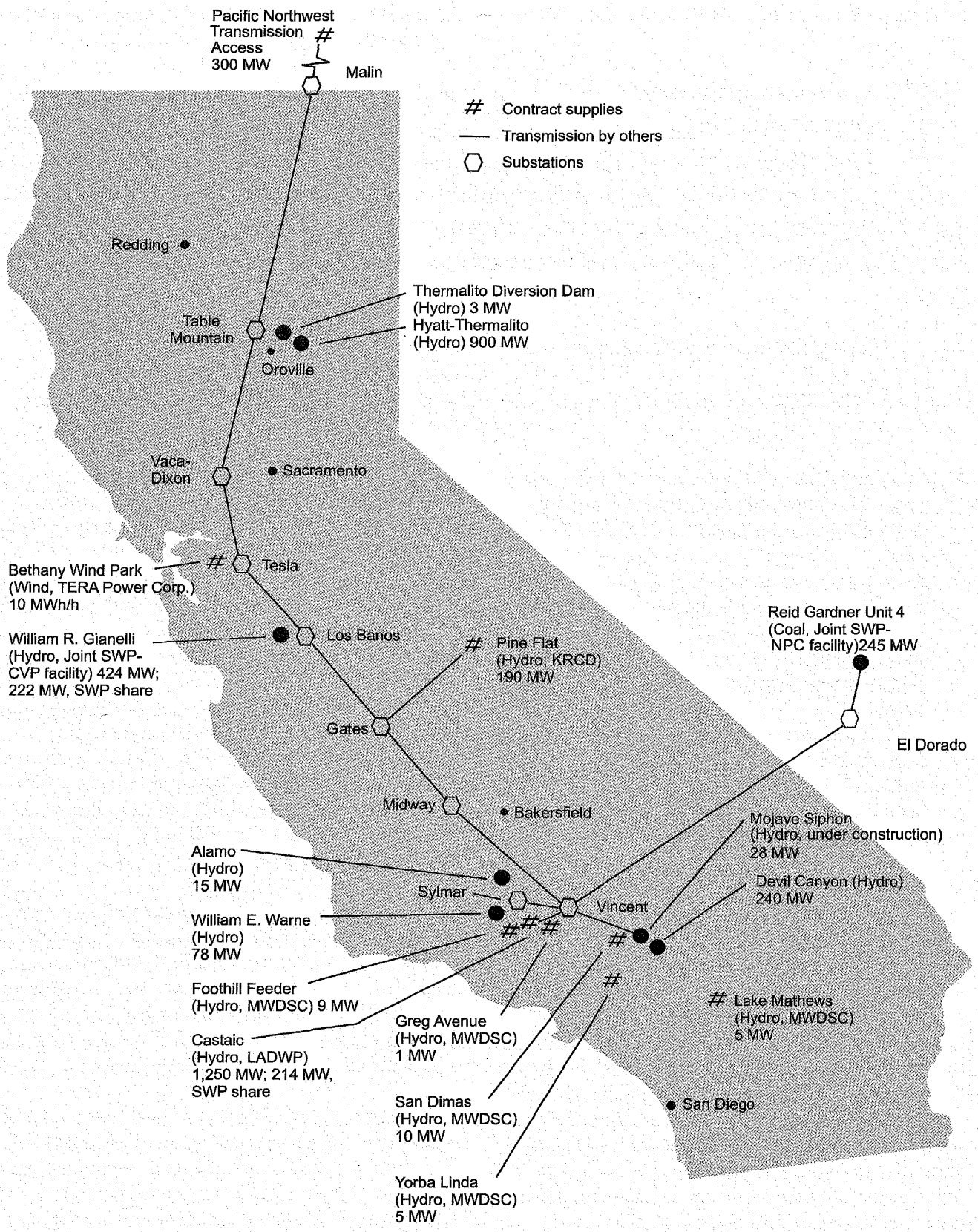


Figure 11-1
Names, Locations, and Generation Capacity of Primary Power Facilities

receives payment based on NPC combustion turbine cost.

The market rates for nonfirm energy sales in most of 1995 were below Reid Gardner Unit 4 energy production rates. To minimize economic losses, the Department and NPC entered into two agreements in 1995. From February 11, 1995, through April 30, 1995, the Department and NPC agreed to shut down Unit 4 since both parties did not need its power during this period. The plant remained shut down for scheduled normal annual maintenance in May 1995. From June 1, 1995, through September 22, 1995, NPC and the Department entered into an agreement providing NPC the sole use of Unit 4, since NPC needed the energy to meet high energy demands during the hot months. During this period, NPC bought and burned 120,000 tons of coal from the Department's share of the coal stockpile to minimize the Department's carrying charges for 1995 coal purchases required by long-term contracts. NPC would supply any coal required for Unit 4 operations beyond the 120,000 tons. In addition, the Department received a small profit from the Department's entitlement energy made available to NPC during this period.

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 is considering several potential power resources. These include a second unit at Alamo Powerplant, a third unit at Warne Powerplant, and additional capacity at Hyatt-Thermalito.

Mojave Siphon Powerplant. Mojave Siphon Powerplant, under construction on the East Branch of the California Aqueduct, will be located upstream of Silverwood Lake. This power plant, with a nameplate rating of 32.4 MW, is scheduled to begin commercial operation in 1997.

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 Development. In 1966, the Department entered into a contract with the Los Angeles Department of Water and Power for the joint development of the West Branch of the California Aqueduct. The LADWP constructed and operates Castaic Powerplant, which is electrically connected to the LADWP transmission system at the Sylmar Substation.

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

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 the Department provides during mid-peak and off-peak periods. In addition, SCE waives 75 percent of its charges to the Department for specified firm transmission service provided to SWP pumping and generating facilities. SCE also makes an annual payment of $900,000 to the Department.

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

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

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

Long-Term Purchases. The Department purchases hydroelectric energy generated by other utilities. The output of the 165 MW Pine Flat Powerplant, owned and operated by the Kings River Conservation District, supplies the SWP about 400 million kWh of energy in median water years.

The Department purchases wind-generated energy from TERA Power Corporation. The energy is delivered from the Bethany Wind Park to the South Bay Pumping Plant near Tracy. Originally TERA 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 are out of service. In early 1995, approximately 50 units were generating energy.

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

MWDSC, the Department may purchase surplus energy from MWDSC's Colorado River Aqueduct system. The Coordination Agreement provides for coordinated operation between the SWP and MWDSC's Colorado River Aqueduct system. It also provides for:

- monthly surplus firm energy sales to MWDSC;
- economy energy sales to MWDSC;
- surplus energy purchases from the Colorado River Aqueduct system; and
- energy exchanges between the Department and MWDSC.

As of December 1995, the Department also had 35 other agreements to purchase interruptible economy energy to satisfy unexpected, short-term energy shortages, and to sell surplus short-term energy.

Contractual Transmission Arrangements

Although able to acquire transmission independently, the Department depends on other sources for transmission services. PG&E and SCE are the Department's primary providers of transmission service between SWP power resources and pumping loads and interconnected utilities for purchases, sales, and exchanges of power.

Long-Term Transmission Service. Under the Comprehensive Agreement with PG&E, the Department receives 1,355 MW of firm transmission service over the PG&E transmission system between SWP pump loads and power resources in Northern and Central California. The agreement allows the Department to request and receive additional firm and interruptible transmission service if needed.

To interconnect the SWP loads and resources in Southern California, the Department receives transmission service from SCE over the SCE transmission system under the SCE-DWR Power Contract and Firm Transmission Service Agreement.

The Department arranged for 300 MW of long-term transmission entitlement under the 1967 EHV Contract with PG&E, SCE, and the San Diego Gas and Electric Company.

Other SWP transmission needs are currently met by contractual arrangements with California utilities.

The Department is working with various public and private utilities to study the need for and feasibility of additional transmission capacity between Central California and the Southwest.

Pacific Northwest Intertie. 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.

California Oregon Transmission Project. 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.

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 needed for SWP water deliveries.

Sales of Excess Power. When generation from SWP power resources occasionally exceeds requirements, the Department sells the excess power on the market.

Currently, the Department has contracts with about 35 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.

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

SWP Power Operation in 1995

Tables 11-1 through 11-4 present statistical information about SWP power operation for calendar year 1995, including energy consumed and generated, energy exchanged and purchased, and power sold.

Energy Consumed

In 1995, energy used at the 22 SWP pumping and powerplants totaled 3.7 billion kWh. Table 11-1 shows the amount of energy used each month at SWP pumping and powerplants 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 11-2 shows amounts of energy generated at SWP facilities in 1995, 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 1995, Hyatt-Thermalito generated 3.9 billion kWh of energy. That amount is over twice the amount generated in 1994. The larger increase in generation was due to above-average rainfall in the Feather River watershed during calendar year 1995.

Energy generated at SWP recovery plants—Alamo, Devil Canyon, Gianelli, and Warne—totaled about 645 million kWh in 1995, about 30 percent less than the amount generated in 1994.

In 1995, the SWP share of energy generated at the coal-fired Reid Gardner Unit 4 totaled 387 million kWh.

Contractual Resource Arrangements and Cost

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 1995, LADWP provided 235.9 million kWh for the Department's share of energy generated at Castaic Powerplant.

Energy Exchanges. The Department has two agreements with SCE to purchase and/or exchange power. According to terms of the 1979 Power Contract (in effect since April 1983), part of the output of the Hyatt-Thermalito complex and all output of Alamo and Devil Canyon powerplants are delivered to SCE. According to the terms of the CEA, which has been in effect since April 1987, the Department delivers energy to SCE each year during on-peak periods and, in return, receives a greater amount of off-peak energy as well as transmission considerations. Those two exchange agreements resulted in a net of about 2.37 billion kWh to the SWP in 1995.

Purchases and Costs. In 1995, the Department purchased 1.54 billion kWh of energy at a cost of $19.81

Table 11-1
Energy Used at Pumping Plants and Power Plants in 1995, by Month
(Millions of Kilowatt-Hours)

Pumping Plants and Power Plants	*Month*												
	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*Total*
Hyatt-Thermalito Pumping-Generating Plant (pumpback and station service)	33.93	0.74	9.74	3.30	0.68	0.03	2.07	6.10	0.34	0.03	28.28	6.09	91.33
North Bay Interim Pumping Plant	0.01	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	0.48	0.45	0.23	0.40	0.30	0.71	1.02	1.00	0.86	0.91	0.74	0.46	7.56
Barker Slough Pumping Plant	0.30	0.24	0.17	0.39	0.21	0.41	0.71	0.61	0.52	0.53	0.46	0.31	4.86
South Bay Pumping Plant	1.24	0.45	1.54	3.84	4.76	8.09	9.64	9.99	5.98	5.60	4.01	1.28	56.42
Bottle Rock Powerplant (station service)	0.07	0.06	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.69
Del Valle Pumping Plant	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.12
Banks Pumping Plant	131.53	74.10	9.31	2.79	22.26	57.21	95.44	82.64	48.00	51.93	23.21	1.02	599.44
Gianelli Pumping-Generating Plant (SWP share)	130.58	35.56	0.25	0.26	0.26	9.09	19.51	16.19	7.54	21.80	18.96	0.57	260.57
Dos Amigos Pumping Plant (SWP share)	7.81	16.01	11.34	11.59	12.00	25.94	37.24	35.84	19.87	14.80	20.50	18.18	231.12
Buena Vista Pumping Plant	4.74	6.32	20.22	14.69	14.53	22.88	29.37	30.33	19.21	3.80	6.92	7.40	180.41
Teerink Pumping Plant	5.35	6.89	22.54	14.94	13.69	19.64	25.16	25.82	18.88	3.02	6.85	7.26	170.04
Chrisman Pumping Plant	11.75	15.41	50.86	32.70	28.92	41.69	53.52	56.36	41.80	5.54	14.67	16.28	369.50
Edmonston Pumping Plant	40.78	53.44	183.12	117.17	100.45	145.02	186.12	198.04	146.14	15.68	48.21	57.08	1,291.25
Alamo Powerplant (station service)	0.07	0.05	0.06	0.05	0.01	0.02	0.02	0.01	0.03	0.07	0.05	0.02	0.46
Pearblossom Pumping Plant	6.40	6.79	5.20	25.06	21.24	26.59	36.27	41.00	25.59	0.46	4.24	12.26	211.10
Mojave Powerplant (station service)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.09	0.08	0.07	0.08	0.38
Devil Canyon Powerplant (station service)	0.21	0.16	0.17	0.13	0.15	0.09	0.01	0.01	0.03	0.19	0.22	0.15	1.52
Oso Pumping Plant	2.42	3.51	20.20	3.33	1.85	4.37	4.69	4.28	5.09	1.47	3.51	1.39	56.11
Warne Powerplant (station service)	0.15	0.08	0.00	0.11	0.12	0.12	0.14	0.14	0.15	0.17	0.11	0.13	1.42
Las Perillas Pumping Plant	0.10	0.14	0.26	0.44	0.77	1.28	1.51	1.29	0.55	0.53	0.46	0.27	7.60
Badger Hill Pumping Plant	0.20	0.33	0.64	1.18	2.08	3.47	4.22	3.59	1.43	1.39	1.18	0.65	20.36
Subtotal	378.13	220.74	335.94	232.45	224.35	366.71	506.72	513.36	342.16	128.06	182.71	130.94	3,562.27
High Voltage Transmission Line Losses	12.55	13.05	7.86	13.91	18.11	17.08	11.37	13.00	14.22	17.70	17.71	12.83	169.39
Total Energy Required for SWP	**390.68**	**233.79**	**343.80**	**246.36**	**242.46**	**383.79**	**518.09**	**526.36**	**356.38**	**145.76**	**200.42**	**143.77**	**3,731.66**

Table 11-2
Energy Generated and Purchased in 1995, by Month
(Millions of Kilowatt-Hours)

Sources of Energy	Month												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
SWP Energy Sources													
Hyatt-Thermalito Powerplant	195.79	396.77	452.97	464.89	498.36	490.32	271.23	304.38	292.48	149.93	125.74	233.66	3,876.52
Gianelli Pumping-Generating Plant (SWP share)	0.00	0.00	2.07	(0.03)	3.78	8.50	10.15	10.00	3.25	1.55	25.76	29.76	94.78
Alamo Powerplant	0.40	0.70	0.39	0.91	3.53	3.53	4.03	5.63	5.29	0.00	0.88	2.30	27.60
Devil Canyon Powerplant	12.57	14.42	15.57	35.41	39.99	48.37	64.73	74.71	62.96	14.00	10.02	17.53	410.27
Reid Gardner Unit 4 (a	76.73	17.24	(1.49)	(1.44)	(1.49)	(0.52)	(0.49)	0.00	(0.20)	89.15	110.50	98.53	386.51
Warne Powerplant	3.35	6.31	42.83	6.41	3.32	8.73	9.48	9.36	10.12	2.68	7.31	2.17	112.08
Subtotal	288.84	435.43	512.35	506.15	547.50	558.93	359.13	404.08	373.90	257.31	280.20	383.95	4,907.76
Energy Sources from Long-Term Agreements (b													
Castaic Powerplant	14.57	18.14	90.75	19.73	7.75	15.59	16.52	16.28	16.64	4.21	10.70	4.98	235.86
Metropolitan Water District of Southern California hydroelectric powerplants (c	6.16	4.51	5.48	9.79	11.69	9.20	11.74	12.15	11.52	8.72	8.88	9.47	109.31
Pine Flat Powerplant	(0.26)	(0.24)	12.23	115.59	120.10	126.37	152.72	124.57	54.09	42.45	1.00	(0.06)	748.55
TERA Power Corporation	0.07	(0.03)	0.04	0.14	0.37	0.14	0.23	0.13	0.01	0.00	0.00	0.00	1.10
PacifiCorp (PP&L) (c	45.18	41.76	60.22	48.00	46.40	43.82	54.38	49.15	38.70	61.97	62.25	63.00	614.82
Power Exchange Delivered to SCE	(121.27)	(205.63)	(233.85)	(254.51)	(275.58)	(282.25)	(228.62)	(250.21)	(229.00)	(120.11)	(118.57)	(160.24)	(2,479.84)
Power Exchange Received from SCE	300.92	429.02	350.86	331.22	356.70	348.58	507.68	531.94	541.03	407.70	373.26	369.03	4,847.94
Power Exchange Delivered to PG&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(24.80)	0.00	0.00	(24.80)
Power Exchange Received from PG&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.00	0.53	0.00	16.53
Power System Deviations Account Transactions	0.24	(0.26)	(0.13)	(0.40)	(0.03)	1.13	(0.95)	0.13	(0.20)	(0.15)	(0.17)	0.19	(0.59)
Subtotal	245.60	287.27	285.60	269.57	267.41	262.58	513.69	484.14	432.79	395.97	337.88	286.37	4,068.87
Purchases (b													
Bonneville Power Administration	0.00	0.00	0.00	0.00	0.00	0.00	3.58	0.00	0.00	6.12	5.76	13.88	29.34
City and County of San Francisco	6.47	1.69	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.25
Electric Clearing Inc.	0.00	0.00	0.00	2.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.53
Enron Power Marketing,Inc. (c	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.22
Pacific Gas and Electric Company	4.10	1.15	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.94
Portland General Electric Company	0.00	0.00	1.05	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	1.71
Puget Sound Power and Light Company	9.82	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.78
Salt River Project	2.70	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.77
Southern California Edison Company	0.27	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.55	0.00	1.90
Western Area Power Administration (MP)	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27
Subtotal	23.36	3.87	2.18	3.03	0.00	0.22	3.58	0.00	0.00	6.12	7.47	13.88	63.71
Total Energy Generated and Purchased	557.80	726.57	800.14	778.74	814.91	821.73	876.40	888.22	806.69	659.40	625.55	684.19	9,040.34
Less Energy Sales (a	(167.12)	(492.78)	(456.30)	(532.37)	(572.46)	(437.93)	(358.32)	(361.89)	(450.33)	(513.66)	(425.14)	(540.39)	(5,308.68)
Total Energy Provided to the SWP	390.68	233.79	343.83	246.37	242.46	383.80	518.09	526.34	356.36	145.74	200.41	143.80	3,731.66

a) The upgrade energy of 41,556 Mwh from Reid Gardner Unit 4 is not included.
b) Amounts show actual energy available for SWP use and include transmission losses, return energy provided for specific contracts, and other necessary adjustments.
c) The energy exchanged/wheeled is not included.

Table 11-3
Power, Transmission, and Other Services Purchased in 1995 and Costs of Purchases, by Area

Name of Supplier	Type of Service Purchased	Energy (kWh)	Energy Cost (Dollars)	Capacity and Transmission Cost (Dollars)	Total Cost (Dollars)
Power and Transmission Purchases					
Northwest Area					
Bonneville Power Administration	Firm and nonfirm energy	29,337,000	340,813		340,813
Portland General Electric	Nonfirm energy	1,710,000	22,855		22,855
PacifiCorp	Firm and nonfirm energy; capacity and transmission	614,822,000	9,029,359	20,314,952	29,407,311
Puget Sound Power and Light Company	Nonfirm energy	10,780,000	168,808		168,808
Northern California Area					
City and County of San Francisco	Nonfirm energy	8,247,000	121,901		121,901
Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company	EHV transmission			1,500,000	1,500,000
Kings River Conservation District	Hydroelectric energy	760,399,776	5,817,021		5,817,021
Pacific Gas & Electric Company	Nonfirm, transmission, and capacity	5,943,000	89,324	5,800,716	5,890,040
TERA Power Corporation (a (b	Wind energy	575,459	39,275		39,275
Western Area Power Administration	Firm energy	270,000	2,970		2,970
Southern California Area					
Los Angeles Department of Water and Power	Nonfirm energy			119,721	119,721
Metropolitan Water District of Southern California	Hydroelectric energy	101,061,160	4,042,446		4,042,446
Southern California Edison Company	Nonfirm energy; transmission	1,900,000	31,218	3,237,720	3,268,938
Southwest Area					
Nevada Power Company				1,413,204	1,413,204
Salt River Project	Nonfirm energy	2,767,000	41,774		41,774
ENRON Power Marketing, Inc.	Firm and nonfirm energy	224,000	1,440		1,440
Subtotal		1,538,036,395	19,812,204	32,386,313	52,198,517
Other Purchases					
Kings River Conservation District	Pine Flat operations and maintenance				3,049,224
	Pine Flat debt service				5,138,832
Los Angeles Department of Water and Power	Hydro powerplant scheduling				1,150
Nevada Power Company	Reid Gardner Unit 4 operations and maintenance				13,718,347
Pacific Gas and Electric Company (c	Midway-Wheeler Ridge, Bottle Rock transmission, operations and maintenance, and ownership				160,707
	Pine Flat ownership				12,076
	Lakeville Line operations and maintenance				89,345
Southern California Edison Company	Additional facilities				1,204,915
	Scheduling and dispatching				155,874
Subtotal					23,530,470
Total					**75,278,987**

a) 127,430 KWh and $8,082 for curtailed energy due to Southbay Pumping Plant shutdown are not included.
b) <$4,736> Southbay transformer operations and maintenance credit is not included.
c) $3,591 Southbay transformer operations and maintenance is not included.

Table 11-4
Energy Sold in 1995 and Revenue from Sales, by Area

Name of Purchaser	Energy Sold (KWh)	Revenue from Energy Sales (Dollars)	Revenue from Capacity and Transmission Sales (Dollars)	Total Power Sales (Dollars)
Pacific Northwest Area				
Portland General Electric Company	956,955,000	13,442,390		13,442,390
PacifiCorp	435,169,000	5,883,038		5,883,038
Puget Sound Power and Light Company	23,381,000	208,181		208,181
Seattle City Light	132,051,000	2,072,040		2,072,040
Northern California Area				
City and County of San Francisco	180,948,000	3,533,439		3,533,439
Lassen Municipal Utility District	11,238,000	125,957		125,957
Modesto Irrigation District	129,159,000	2,886,034	1,764,000	4,650,034
Northern California Power Agency	175,196,000	2,212,803	271,756	2,484,559
Pacific Gas & Electric Company	240,934,000	2,681,903	5,150	2,687,053
City of Redding	6,642,000	81,409		81,409
Sacramento Municipal Utility District	506,605,000	5,716,138		5,716,138
City of Santa Clara	70,391,000	836,307	48,114	884,421
Turlock Irrigation District	11,390,000	93,160		93,160
Western Area Power Administration, Mid-Pacific	20,010,000	217,100		217,100
Southern California Area				
City of Anaheim	106,464,000	1,057,840		1,057,840
City of Azusa	36,905,000	497,691		497,691
City of Colton	4,338,000	46,987	804	47,791
Los Angeles Department of Water and Power	149,736,000	1,648,284	633,600	2,281,884
Metropolitan Water District of Southern California	60,760,000	384,158	19,458	403,616
City of Riverside	168,224,000	1,754,462	480,000	2,234,462
Southern California Edison Company	340,046,000	2,877,274	900,000	3,777,274
City of Vernon	512,594,000	7,770,508	740,812	8,511,320
City of Pasadena	6,589,000	74,215		74,215
City of Burbank	8,558,000	68,347		68,347
City of Glendale	23,098,000	225,071		225,071
San Diego Gas and Electric Company	77,212,000	786,194		786,194
Southwest Area				
Nevada Power Company	674,372,480	5,364,177	601,858	5,966,035
Salt River Project (a	346,324,000	3,198,644		3,198,644
Power Brokers				
Electric Clearing House, Incorporated	182,801,000	2,095,010		2,095,010
Enron Power Marketing, Incorporated (b	74,411,000	828,464	182,000	1,010,464
KOCH Power Service, Incorporated	3,711,000	52,051		52,051
Louis Dreyfus Electric Power, Incorporated	89,820,000	2,008,685		2,008,685
LG&E Power Marketing, Incorporated	10,570,000	139,840		139,840
Grand Total	**5,776,962,480**	**70,867,801**	**5,647,552**	**76,515,353**

a) Does not include $2,792.76 in late payment penalties.
b) Does not include $1,735.85 in late payment penalties.

million. Associated costs for capacity, transmission, and dispatching services totaled $32.39 million. Other SWP power costs, including those for debt service at Pine Flat Powerplant, totaled $23.53 million. Table 11-3 shows amounts of power, transmission, and other services purchased in 1995 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. The plant provided over 749 million kWh to the SWP in 1995 at a total cost of $5.8 million.

The Department also has two other contracts for purchasing energy. One contract is with PacifiCorp, from which the Department purchased 615 million kWh in 1995; the other contract is with TERA Power Corporation for energy produced at Bethany Wind Park near South Bay Pumping Plant. About 50 wind turbines were operational in early 1995; they provided 1.1 million kWh of wind-generated energy during the year.

Under the MWDSC Small Hydro Contract, the Department received 101 million kWh of energy in 1995 from five small hydroelectric powerplants on the MWD system at a cost of $4.0 million.

The net gain to SWP during 1995 from its long-term contracts was 4.07 billion kWh (Table 11-2).

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 1995, the SWP purchased short-term energy from 10 utilities and marketers. The short-term energy purchases totaled 63.7 million kWh (Table 11-2).

Transmission Arrangements. SCE waives 75 percent of its charges to the Department for specified firm transmission service provided to SWP pumping and generating facilities. In 1995, the savings to the Department from SCE was $6.65 million.

Sales of Excess Power

In 1995, the Department sold 5.78 billion kWh of energy to 28 utilities and 5 power marketers for total revenues of $70.87 million. The Department also received $5.6 million in revenues for capacity payments and transmission arrangements. See Table 11-4 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. Although the Department forecasts power requirements up to 2035, it pays 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 forecasted. 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

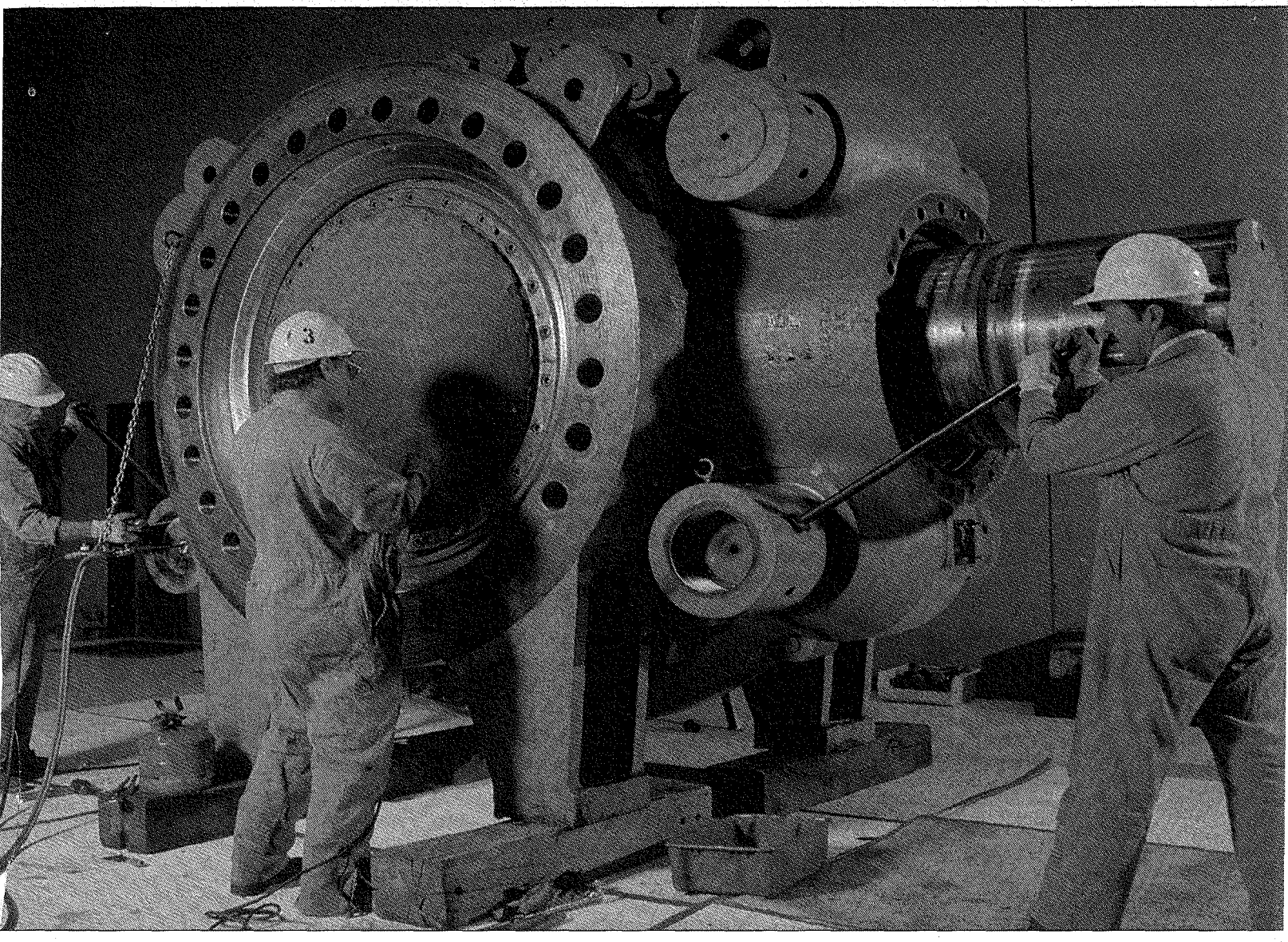
The Department bases its forecast of electric power primarily on SWP pumping power requirements to deliver water for SWP contractors' short-term and long-term water delivery requests. Requirements are based on the amount of energy necessary to deliver entitlement water requested by water contractors,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

ation 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 12
Facilities Maintenance



Valve repair at Edmonston Pumping Plant

Significant Events

- **Emergency Repair at Mile 39.5.** During the week of October 16, 1995, departmental personnel found major problems at milepost 39.5. The repairs were completed under an urgency contract.
- **Consulting Board.** In October 1995, a three-member departmental consulting board reviewed Del Valle, Patterson, Clifton Court, and Bethany dams.
- **Sediment Removal Project—California Aqueduct Mile 135 to 159.** Severe flooding created substantial sediment deposits between Mile 135 and 159, causing extensive turbidity problems for the San Joaquin Valley agricultural and Southern California urban state water contractors. Cost of the Interim Sediment Removal Project was about $600,000.
- **Seepage Repair—Pool 49, Mile 331.89, 334.02, and 334.95.** During summer 1995, three locations in Pool 49—Mile 331.89, 334.02, and 334.95—showed severe settlement and cracking of the liner. Repair was essential to maintain the integrity of the Aqueduct. The Department awarded a contract for the $1,400,000 repair, which was completed in December 1995.
- **Arroyo Pasajero Program.** The Arroyo Pasajero and its tributaries drain about 530 square miles of the coast mountains west of the California Aqueduct near Coalinga in Fresno County. Periods of heavy rainfall cause high peak flows and a heavy sediment load. March 1995 floods at the Arroyo Pasajero and nearby streams were the largest experienced since completion of the Aqueduct.
- **Consulting Board.** In May 1996, a two-member consulting board reviewed adequacy of the design and construction of the San Bernardino Tunnel Intake Replacement.

The Department of Water Resources, through the Division of Operations and Maintenance, monitors all State Water Project facilities to ensure that they are safe and reliable. Operations and Maintenance staff at Department headquarters biannually inspect and report on all facilities to document any deficiencies. Those inspections allow facilities to be maintained at the highest level possible with available staff and resources.

The Department conducts several types of inspections of SWP facilities. Operations and Maintenance staff collect and evaluate data about the performance of each facility. Engineers from the Division of Safety of Dams inspect jurisdictional SWP dams annually to ensure that each dam is in a safe condition. The engineers evaluate proposed modifications to existing dams as well as the design and construction of new jurisdictional dams. The Federal Energy Regulatory Commission also inspects all the licensed SWP facilities annually. These inspections include a review of significant events, instrumentation data, and the visual appearance of each dam, penstock, or power plant, etc. Finally, the Department is required to contract periodically with independent consultants to review the safety of SWP dams and power facilities.

Inspecting and Maintaining Project Dams

Between July 1, 1995, and June 30, 1996, Department personnel inspected and performed routine and scheduled maintenance on SWP dams. Division of Safety of Dams' engineers also inspect SWP dams annually with O&M personnel. Some inspections were conducted under FERC and *California Water Code* requirements to evaluate SWP dam facilities every 5 years. Other activities were performed by the Division of Operations and Maintenance as routine inspections.

Oroville-Thermalito Area

Inspections required by FERC regulations and the *California Water Code* were conducted at the Oroville-Thermalito complex in early 1995. The Department continued follow-up studies and remediation activities in response to earlier inspections conducted under FERC and *Water Code* requirements.

In the 5-year review of 1989, the FERC independent consulting team expressed concern about broken instrumentation tubing in Oroville Dam and made specific recommendations regarding its repair.

A Division of Design and Construction investigation led to the 1992 memorandum report *Investigation of Recent Instrumentation Performance at Oroville Dam.* The report recommended that hydraulic tubing be grouted at specific locations within the core block. Because of the unique application and the level of control required for this activity, the Department used in-house staff and a grouting consultant to evaluate remediation alternatives during 1995-96.

Delta Field Division

In October 1995, a three-member board inspected and reviewed the performance of Del Valle, Patterson, Clifton Court, and Bethany dams. The dams were satisfactory for continued operation.

Southern Field Division

A board of two consultants was retained to review the adequacy of the design and construction of the San Bernardino Tunnel Intake Replacement at Cedar Springs Dam. During design and construction, this board made independent findings about conditions that affect the safety and adequacy of the San Bernardino Tunnel Intake Replacement. The board reviewed the ongoing construction and found it satisfactory.

Routine Inspections

Routine inspections were conducted 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 dams in the San Luis Field Division (O&M only); and at Cedar Springs, Pyramid, Castaic, and Perris dams in the Southern Field Division.

Independent Reviews

The Department periodically employs consultants to independently review and assess safety conditions of SWP dams, powerplants, and other facilities. 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 Department staff. The Department then prepares action plans based on the consultants' recommendations.

Consultants performed the following reviews for the Department.

FERC Reviews. To comply with the Federal Energy Regulatory Commission's regulations, consultants review FERC-licensed dams and power generation facilities owned by the Department. These reviews, which may be conducted by one or more consultants, are scheduled every 5 years.

***California Water Code* Reviews.** To comply with the *California Water Code,* the Department is required to retain a consulting board to review:

- the adequacy of the design of a dam the Department proposes to construct; and
- the safety of the completed construction, including the terms and conditions for the Certificate of Approval.

To further comply with the *California Water Code,* the Department is required to retain a review board at least once every 5 years to review the operational performance of Department-owned dams.

A two-member board reviewed the adequacy of the design and construction of the San Bernardino Tunnel Intake Replacement at Cedar Springs Dam. During design and construction, this board made independent findings on conditions that affect the safety and adequacy of the San Bernardino Tunnel Intake Replacement. Since January 1994, 6 consulting board meetings and inspections have been conducted. The last meeting and inspection was held during May 1996. The board reviewed the ongoing construction and found it to be satisfactory.

In October 1995, a three-member board inspected and reviewed the performance of Del Valle, Patterson, Clifton Court, and Bethany dams. The dams were found to be satisfactory for continued operation.

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 fiscal year 1995-96 four major activities occurred:

- emergency repair at Mile 39.5 of the California Aqueduct;
- sediment removal project at Mile 135 to 159 of the California Aqueduct;
- seepage repair at Pool 49 of the California Aqueduct; and
- emergency, short-term, and long-term actions at the Arroyo Pasajero watershed.

Emergency Repair at Mile 39.5

During the week of October 16, 1995, personnel from O&M headquarters and field divisions, as well as DOE staff, found large cracks in various areas of both the primary and secondary embankments at Mile Post 39.5, a large sinkhole on the secondary

embankment, and a leak that flowed 25 gallons per minute from the embankment. In addition, divers discovered large cracks in the canal lining.

Delta Field Division personnel dewatered the aqueduct and took other actions that prevented the embankment from failing completely. DOE, in coordination with O&M, designed, advertised, bid, and administered an urgency contract to repair the Aqueduct. The repair consisted of cleaning the canal lining in the repair area, placing a vinyl liner over the cleaned area, and placing a new shotcrete liner over the vinyl.

Sediment Removal Project—California Aqueduct Mile 135 to 159

Severe flooding during the winter of 1994-95 resulted in substantial sediment deposits into the Aqueduct between Mile 135 and 159. This sediment caused extensive turbidity problems for the San Joaquin Valley agricultural and Southern California urban State Water Contractors. The majority of the sediment was very fine clay (less than 75 microns) and was "light and fluffy" in consistency. This made the removal process extremely difficult. It was necessary to remove the sediment as soon as possible to protect the water quality of the SWP and minimize the extent of damage to all downstream mechanical transport equipment.

A demonstration sediment-removal method was examined in December 1995 and determined reasonably successful. The effectiveness of the demonstration was based on minimal turbidity increase and maximum cost effectiveness. Cost of the contract was $15,000 and approximately 2,500 cubic yards of sediment were removed. The demonstration brought forth additional questions that dictated performing further tests. A second investigation, the Interim Sediment Removal Project, was conducted in May and June 1996. Approximately 115,000 cubic yards of sediment were removed before the process was halted. Due to lower turbidity levels of the Aqueduct, removal of the sediment was postponed indefinitely. The turbidity levels, which were considerably less than those in 1995, have not caused the operational difficulties that occurred in 1995. The cost of the Interim Sediment Removal Project was about $600,000.

Seepage Repair—Pool 49, Mile 331.89, 334.02, and 334.95

Field observations during summer 1995 of three locations in Pool 49, Mile 331.89, 334.02, and 334.95, showed a canal lining failure similar to that of Mile 333.53 during spring 1995. The settlement and cracking of the canal lining was initially minor and limited to a small area. The differential settlement over the box culverts caused the canal lining to crack further and the lining joints to separate, allowing water to flow directly from the canal into the embankment. As a result, the canal lining and the embankment continued to settle causing the concrete panel cracks to increase in size. The repair of the canal lining was essential to maintain the integrity of the Aqueduct.

Southern Field Division personnel dewatered and cleaned the reaches to prepare the Aqueduct for the contractor's repair. The repair required removing broken panels, excavating within the canal liner, replacing eroded material, sealing open joints and cracks, and applying a geomembrane and shotcrete cover. The Department awarded a contract to complete the $1,400,000 repair. The repair was completed in December 1995.

Arroyo Pasajero Program

The Arroyo Pasajero and its tributaries drain approximately 530 square miles of the Coast Mountains west of the California Aqueduct near Coalinga 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, this sediment transported by Arroyo floods has 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 at the Aqueduct include a retention basin designed to store storm runoff and sediment upstream of the Aqueduct and two facilities

to release floodwater from the basin. The volumes of runoff and sediment deposition are much greater than estimated during the original design of the retention basin in the mid-1960s.

Significant Program Activities for the Arroyo Pasajero. March 1995 floods at the Arroyo Pasajero and nearby streams were the largest experienced since the completion of the California Aqueduct. Damage was widespread. In response, the Department took the following actions:

- The Department launched a multi-agency forum to provide interested entities access to the Arroyo Pasajero flood control planning studies and project formulation activities;
- The Department began reconnaissance-level studies of flood control programs for watersheds adjacent to the Arroyo Pasajero including Salt Creek, Cantua Creek, Martinez Creek, Domengine Creek, Arroyo Hondo, Arroyo Ciervo, and Tumey Gulch;
- Program management and planning activities for Arroyo Pasajero and the Cantua Creek Stream Group were transferred from the Division of Operations and Maintenance to the Division of Planning; and
- The scope of the joint Corps/DWR four-year feasibility study of long-term Arroyo Pasajero flooding solutions was expanded to incorporate the impacts of the March 1995 floods in the sedimentation studies, hydrology studies, mapping programs, and flood/sediment control alternatives.

March 1995 Flood Emergency. In March 1995, the largest recorded single storm peak flows and volumes hit the Arroyo Pasajero and adjacent watersheds. This event emphasized the importance of the Department's efforts to minimize both immediate and long-term impacts to the aqueduct and surrounding lands resulting from Arroyo Pasajero flooding. Peak flows in excess of 30,000 cfs caused the collapse of twin I-5 bridges spanning the Arroyo Pasajero. Seven people traveling along I-5 died in this tragedy. Flood waters filled the Arroyo Pasajero retention basin, breached the aqueduct's western embankment, flooded lands both east and west of the Aqueduct, moved railroad tracks, flooded local roads, inundated farmland, ruptured an oil pipeline, undermined power transmission towers, and caused other damage.

In addition, the Cantua and Salt Creek watersheds, which lie approximately 20 miles to the north of the Arroyo Pasajero, experienced significant flooding during this same March 1995 storm. These flood waters overtopped approximately 600 feet of the Aqueduct's western embankment and, together with the ungated drain inlets at mileposts 135 and 136, delivered over 10,000 acre-feet of flood water and an estimated 800,000 cubic yards of sediment into the Aqueduct. This caused severe damage to the Aqueduct's concrete liner and raised turbidity levels in the Aqueduct that resulted in additional operating costs to downstream water customers throughout the summer of 1995.

Interim Programs. Since 1969, the Department has been working with the U.S. Bureau of Reclamation, the agency responsible for designing and constructing the section of the Aqueduct affected by the Arroyo Pasajero and the Department's cost sharing partner in the operation and maintenance of the facility, to minimize the effects of heavy flooding. In 1980, asbestos was discovered in runoff from the Arroyo Pasajero. 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,* an evaluation of flood control alternatives. This report was certified by Corps headquarters, giving the Corps approval to proceed with a feasibility-level study. The feasibility study, which was initiated in 1994 as a joint effort with the Department, will provide a more rigorous analysis of the flooding and sedimentation problems and evaluate potential solutions in greater detail. Under the Corps process, if a federal interest is found, a National Economic Development plan that maximizes flood control benefits will be identified.

The study will run through 1998 with a projected cost of $5.6 million. The Department, as local spon-

sor, is committed to 50 percent of the total study cost with one-half of this commitment met by providing in-kind services for the study. Also, under the Department's agreement with the USBR for operation of Joint-Use Facilities of the San Luis Unit, the USBR is paying 45 percent of the Department's study cost.

Through June 1996, the Department's activities as local sponsor included obtaining aerial photography and producing topographic mapping covering over 200 square miles, coordinating with the Corps on public involvement, completing a hydrologic analysis of the watershed, developing a hydrologic model, developing in coordination with the Corps and Northwest Hydraulic Consultants, a sediment transport model, evaluating alternative conveyance facilities east of the Aqueduct, and further defining the specific parameters governing the alternatives to be investigated.

As a result of the March 1995 floods at the Arroyo Pasajero, the California Water Commission requested that the Department convene an Arroyo Pasajero Multi-Agency Forum—a forum comprised of concerned public officials and agency representatives, as well as members of the public to provide early access to study findings and an opportunity to participate in the formulation of project alternatives.

Cantua Creek Stream Group. In response to the March 1995 floods at the Cantua Creek Stream Group, the Department initiated a reconaissance-level study of flood control measures for Martinez Creek, Domengine Creek, Salt Creek, Cantua Creek, 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 flood waters east of the Aqueduct to Fresno Slough. A draft reconnaissance report is scheduled for completion in mid-1997.

Repairs and Modifications

Table 12-1 presents information, arranged chronologically, about significant maintenance activities at SWP pumping and power plants. The table includes information about incidents resulting in outages exceeding 120 hours.

Information for this chapter was provided by the Division of Operations and Maintenance and the Division of Safety of Dams.

Table 12-1
Outages for Maintenance and Repair of Facilities in 1995, by Month

Month	*Facility*	*Description (in order of start date)*
January 1995	Banks Pumping Plant	Unit 2 out of service from January 3 to January 31 to measure field coils for future replacement.
	Las Perillas Pumping Plant	Unit 5 out of service from January 5 to February 17 for annual mechanical preventive maintenance.
	Hyatt Powerplant	Unit 2 out of service from January 19 to February 22 for annual maintenance and trouble calls.
	Thermalito Pumping-Generating Plant	Unit 1 out of service from January 27 to March 1 for annual maintenance.
February 1995	Badger Hill Pumping Plant	Unit 5 out of service from February 21 to March 30 for annual mechanical preventive maintenance.
	Devil Canyon Powerplant	Plant out of service from February 21 to March 7 to repair leak in the 3" bypass valve.
	Oso Pumping Plant	Unit 1 out of service from February 23 to May 15 to disconnect from existing control system and make connections to the new system.
	Gianelli Pumping-Generating Plant	Units 7 and 8 and #4 penstock out of service from February 28 to March 31 to inspect penstock, perform biannual maintenance on Unit 7, and do a complete overhaul of Unit 8.
	Gianelli Pumping-Generating Plant	Unit 8 continues out of service under an additional clearance until October 12 to complete overhaul.
March 1995	Devil Canyon Powerplant	Unit 3 out of service from March 2 to March 8 to remove efficiency test equipment.
	Alamo Powerplant	Unit 1 and penstock out of service from March 19 to April 10 to check bearing clearance and install piping for turbine air suppression system.
	Chrisman Pumping Plant	Unit 3 out of service from March 13 to March 17 for rotor balance test.
	Devil Canyon Powerplant	Unit 3 out of service from March 17 to March 21 to remove efficiency test equipment.
	Edmonston Pumping Plant	Unit 6 out of service from March 20 to March 31 to replace cooling water piping in unit motor room.
	Devil Canyon Powerplant	Unit 3 out of service from March 23 to March 31 to remove test equipment and epoxy turbine sections.
	Hyatt Powerplant	Unit 3 out of service from March 27 to May 31 for annual maintenance and to rewedge stator.
	Pearblossom Pumping Plant	#3 discharge line and Units 7, 8, and 9 out of service from March 26 to April 4 for contractor to replace upstream seat seals on units 7, 8, and 9.
	Thermalito Pumping-Generating Plant	Unit 2 out of service from March 29 to April 19 for annual maintenance and job orders.
	Edmonston Pumping Plant	Unit 3 out of service from March 27 to April 7 to replace cooling water piping in unit motor room.

Table 12-1
Outages for Maintenance and Repair of Facilities in 1995, by Month (Continued)

Month	*Facility*	*Description (in order of start date)*
March 1995	Skinner Fish Protective Facility	New holding tank building out of service from April 3 to May 15 to reinstall rebuilt collect valve for holding tank #7.
April 1995	California Aqueduct	Check 32, gate 1 out of service from April 12 to June 12 to remove gate, repair and install anodes.
	California Aqueduct	Check 31, gate 3 out of service from April 12 to June 6 to remove gate, repair and install anodes.
	Badger Hill Pumping Plant	Unit 4 out of service from April 10 to May 5 for annual mechanical preventive maintenance.
	Buena Vista Pumping Plant	Unit 10 out of service from April 13 to October 31 to install stainless impeller and inspect discharge line #8.
	Devil Canyon Powerplant	Unit 4 out of service from April 12 to April 24 to grind turbine buckets for future efficiency tests.
	Reid Gardner Powerplant	Unit 4 out of service from April 16 to May 26 for scheduled maintenance.
	Hyatt Powerplant	Unit 4 out of service from April 17 to April 28 to investigate transformer combustible gas build up and repair same.
	South Bay Pumping Plant	1st stage out of service from April 22 to May 6 to replace cooling water line.
	Chrisman Pumping Plant	Unit 2 out of service from April 24 to December 29 for impeller replacement, pump case refurbishment, and stator rewind.
May 1995	Edmonston Pumping Plant	Unit 2 out of service from May 1 to May 15 to replace corroded cooling water piping.
	Banks Pumping Plant	Unit 2 out of service from May 1 to June 16 to remove rotor for contractor to inspect stator coils.
	Alamo Power Plant	Unit 1 out of service from May 8 to May 31 for annual calibration of relays.
	Teerink Pumping Plant	Unit 9 out of service from May 8 to May 12 for uncoupled test run to balance rotor.
	Devil Canyon Powerplant	Unit 3 out of service from May 26 to May 30 to remove efficiency test equipment.
	Las Perillas Pumping Plant	Unit 4 out of service from May 15 to June 9 for annual mechanical preventive maintenance.
	Edmonston Pumping Plant	Unit 6 out of service from May 15 to May 26 to replace corroded cooling water piping.
	Edmonston Pumping Plant	Unit 8 out of service from May 16 to May 25 to replace corroded cooling water piping.
	Gianelli Pumping-Generating Plant	Units 5 and 6 out of service from May 17 to May 26 to repair Unit 5 butterfly valve hydraulic ram.
	Oso Pumping Plant	#3 discharge line and units 3, 4, 5 and 6 out of service from May 17 to May 23 to reinstall Unit 3 discharge valve and remove unnecessary hot water bypass lines from units 4, 5, and 6.

Table 12-1
Outages for Maintenance and Repair of Facilities in 1995, by Month (Continued)

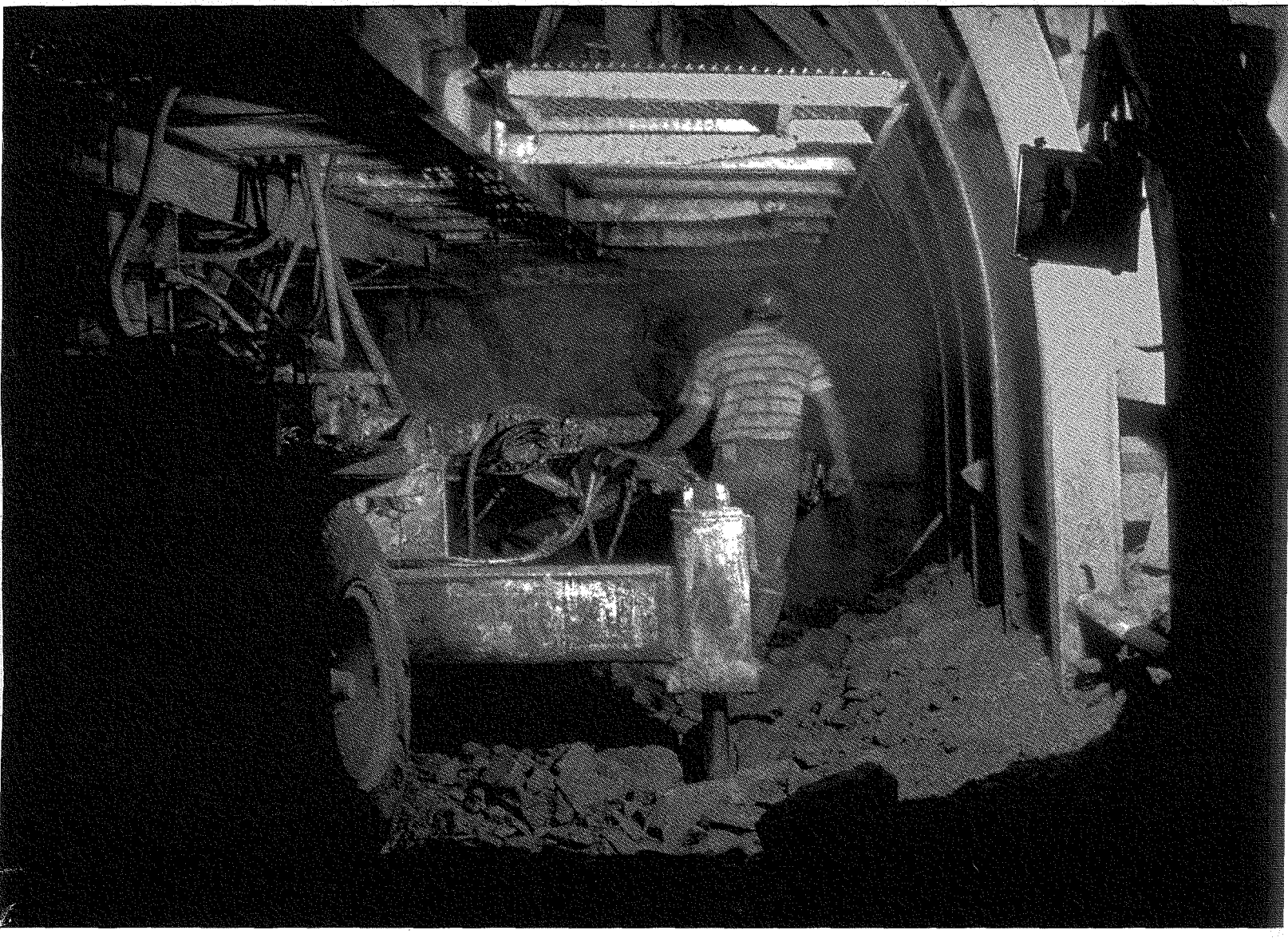
Month	*Facility*	*Description (in order of start date)*
May 1995	Pearblossom Pumping Plant	Unit 3 out of service from May 22 to June 23 for annual preventive maintenance.
	Oso Pumping Plant	Unit 2 out of service from May 25 to July 1 to replace impeller and annual preventive maintenance.
June 1995	Thermalito Pumping-Generating Plant	Unit 1 out of service from June 5 to June 16 for annual preventive maintenance.
	Devil Canyon Powerplant	Unit 1 out of service from June 29 to July 14 for annual preventive maintenance.
July 1995	Warne Pumping Plant	Unit 1 out of service from July 31 to August 8 for semi-annual electrical preventive maintenance.
August 1995	Banks Pumping Plant	Units 1, 2, and 3 out of service from August 8 to August 11 for annual preventive maintenance and calibration of unit relays.
	Banks Pumping Plant	Units 4 and 5 out of service from August 14 to August 18 for annual preventive maintenance and calibration of unit relays.
	Warne Pumping Plant	Unit 2 out of service from August 14 to August 18 to repair restoring mechanism.
	Banks Pumping Plant	Units 6 and 7 out of service from August 21 to August 25 for annual preventive maintenance and calibration of unit relays.
	Pearblossom Pumping Plant	Discharge line #2 out of service from August 23 to August 31 to remove and rebuild unit discharge valve ram and replace O-rings.
September 1995	South Bay Pumping Plant	Stage 1 out of service from September 11 to November 22 for replacement of stage 1 switch gear.
	Southern California Aqueduct	Pool 49 out of service from September 23 to November 16 to repair liner.
	Chrisman Pumping Plant	#2 discharge line and units 4 and 5 out of service from September 25 to October 16 to repair leak in discharge line #2 coupling and replace O-ring.
	Teerink Pumping Plant	Unit 2 out of service from September 25 to November 17 for annual motor maintenance.
October 1995	Southern California Aqueduct	Pool 63 out of service from October 1 to November 23 for Mojave Water Agency to install new turnout.
	Hyatt Powerplant	Unit 4 out of service from October 2 to November 8 for annual maintenance and equipment modification.
	Thermalito Powerplant	Unit 1 out of service from October 2 to November 9 for annual maintenance.
	Devil Canyon Powerplant	Santa Ana Pipeline out of service from October 15 to November 12 for contractor to inspect and repair bad sections of pipe.
	Alamo Powerplant	Penstock and Unit 1 out of service from October 11 to November 20 to remove and repair discharge valve.
	Mojave Siphon	Pipeline out of service from October 20 to November 4 for biannual inspection.

Table 12-1
Outages for Maintenance and Repair of Facilities in 1995, by Month (Continued)

Month	*Facility*	*Description (in order of start date)*
October 1995	Las Perillas Pumping Plant	Unit 1 out of service from October 25 to November 22 for annual mechanical preventive maintenance.
	South Bay Pumping Plant	1st stage discharge tube out of service from October 30 to November 3 to replace 1st stage discharge tube drain valve.
	Pearblossom Pumping Plant	Discharge line #3 and units 7, 8, and 9 out of service from October 31 to December 1 for contractor to repair discharge valve seats and replace leaking mechanical seals on units 7, 8, and 9.
November 1995	Pine Flat Powerplant	Unit 1 out of service from November 6 to November 30 for annual maintenance.
	Clifton Court Forebay	Out of service from November 7 to November 17 for safety of dams embankment inspection.
	California Aqueduct	Pool 7 out of service from November 7 to January 7, 1996, to drain pool and repair liner.
	Skinner Fish Protective Facility	Channels 1 and 2 out of service from November 9 to November 17 to repair return water pumps.
	Hyatt Powerplant	Unit 1 out of service from November 13 to January 3, 1996, for annual maintenance, stator rewedge, and turbine inspection and repairs.
	Thermalito Powerplant	Unit 2 out of service from November 16 to December 10 for annual maintenance and modifications.
	Warne Pumping Plant	Unit 1 out of service from November 17 to December 29 to adjust restoring arm cable, calibrate actuator, and modify deflector circuit.
	Las Perillas Pumping Plant	Unit 2 out of service from November 20 to December 11 for annual mechanical preventive maintenance.
December 1995	Edmonston Pumping Plant	Unit 13 out of service from December 4 to April 4, 1996, for warranty rewedge of unit 13 stator.
	Warne Powerplant	Peace Valley Pipeline out of service from December 17 to December 25 for inspection and sounding of prestressed concrete pipe.
	South Bay Aqueduct	Out of service from December 3 to December 17 to inspect and repair canal panels.
	Pine Flat Powerplant	Unit 3 generator out of service from December 6 to December 29 for annual maintenance.
	Gianelli Pumping-Generating Plant	Unit 5 out of service from December 14 to December 18 for semiannual maintenance and to inspect amortisseur and field windings.
	Thermalito Powerplant	Unit 4 out of service from December 21 to January 30, 1996, for annual maintenance, modifications, and repairs.

Chapter 13

Engineering and Right of Way



Underground construction on SWP

Significant Events

- Division of Design and Construction was reorganized and renamed the Division of Engineering.
- Between July 1995 and June 1996, the Division worked on or completed 34 design projects. Concurrently, 67 construction projects were in progress or completed.
- Construction of the Mojave Siphon Powerplant was completed.
- All 23 contracts for Coastal Branch, Phase II, facilities have been awarded and work is in progress.
- Work on feasibility studies for the East Branch Extension was initiated and is underway.
- A program to inspect and reanalyze the radial gates on State Water Project facilities was initiated. Inspections are performed by climbing teams trained by Caltrans personnel.

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 Governor Edmund G. Brown California Aqueduct; by 1968, the State Water Project 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 possibly extending the SWP to the San Gorgonio Pass service area.

Division of Engineering Activities

Division of Design and Construction Reorganized

The historic mission of the Division of Design and Construction was associated with the construction of very large facilities for the SWP. In the future, however, work for the Division will focus more on repairs and modifications of existing SWP facilities. Accordingly, the projects will generally be smaller and require less time and money. The total amount of work will also be substantially less than in the past.

To help the Division manage the projected changes and decreased workload, the Department contracted with Cooperative Personnel Services, a public agency that provides personnel services to other government agencies. CPS issued a report in January 1996 that recommended several ways for the Division to adapt to the changing workload.

Division response to the CPS report was to accept the overall evaluation and look for ways to implement the recommendations. The first step was to develop an interim organizational structure and change the name to the Division of Engineering. The interim organization became effective March 11, 1996. Major components of this reorganization were:

- elimination of the Design Office Chief and the Construction Office Chief;
- reorganization of the branches for a net reduction from 11 to 7 branches; and
- elimination of 9 supervisory positions ranging from senior level to Office Chief.

In addition to creating the interim reorganization, a restructuring subcommittee was appointed to develop means to refine the interim organizational structure and implement the recommendations of the CPS report. The subcommittee consisted of managers from the divisions of Engineering and Management Services and met regularly for 3 months. The subcommittee completed a draft report that included 36 recommendations focusing on the following:

- development of a staff reduction schedule to meet projected declines in workload;
- assignment of major authority and responsibilities to Division Program Managers;
- development of a client focus;
- identification of mechanisms to increase cost-effectiveness and timely completion of work;
- identification of possible incentives for improved employee performance;
- identification of mechanisms for improved administration of construction contracts; and
- creation of new mission statement for Division.

The draft report was reviewed by Department management and the state water contractors. Printing and distribution of the report is expected in September 1996.

Between July 1995 and June 1996, the Division of Engineering worked on about 34 design projects that were in progress or completed. Table 13-1 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 fiscal year 1995-96, 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 implementation grouting at Oroville Dam.

Sixty-seven construction projects were in progress or completed between July 1995 and June 1996. Those projects are listed in Table 13-2. The table also shows project costs, dates contractors received the Notice to Begin Work, and dates when work was operationally complete and recommended for acceptance. Costs shown in Table 13-2 are actual costs of completed work or estimated costs of construction in progress.

Information in Tables 13-1 and 13-2 is organized geographically according to construction divisions. Within each division, facilities where design or construction activities occurred are listed alphabetically. Descriptions of activities taking place at each facility are listed chronologically according to the date work began.

Oroville Division

Oroville Dam. The Special Consulting Board for the Oroville facilities met three times to review instrumentation grouting at Oroville Dam. The three-person consulting board was formed on the recommendation of the Federal Energy Regulatory Commission. In April 1995, crews grouted drill holes to seal the Monolith 14 AB Joint in Oroville Dam coreblock. In addition, the Special Consulting Board guided the development of specialized grout formulations and grouting techniques. After an extensive evaluation and testing program, an acrylic resin grout was found to be acceptable for grouting the hydraulic instrument tubes. However, the long-term availability of this grout is questionable. Therefore, grouting the instrument tubes was deferred until conditions warrant implementation of the grouting plan. A report summarizing the design, testing, and results of the grouting program will be completed in fall 1996.

Airtight covers were designed to protect the Oroville Dam Spillway trunnion beam from further moisture intrusion. The covers will be designed and purchased by Division of Engineering and installed by Operations and Maintenance Oroville Field Division by the end of September 1996.

Feather River Fish Barrier Dam. Staff investigated the cause and source of the right abutment seepage as recommended by FERC and the Director's Safety Review Board. This investigation concluded that the source of the seepage was an abandoned water supply line for the temporary fish facilities. Oroville Field Division personnel are scheduled to backfill the water supply line with concrete in fall 1996.

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 FERC Safety Inspection reports. A memorandum report summarizing this evaluation should be completed by the end of 1996.

Other Activities. Staff performed reviews for the Americans with Disabilities Act on the facilities in the field division. Plans and specification for modifications were started for the Hyatt Powerplant and the Feather River Fish Hatchery in April 1996. Construction is scheduled to start in March 1997 and finish in June.

Table 13-1
Design Activities, July 1995 through June 1996, by Division

Construction Division and Facility	*Construction Contract*	*Date Design Began*	*Design Completion Date*
Oroville Division			
Oroville Dam	Instrumentation grouting program	May 1994	December 1995
Lake Oroville, Thermalito Forebay, and Thermalito Afterbay	Modifications to recreational facilities	December 1994	July 1995
Feather River Fish Hatchery and Powerplant	Americans with Disabilities modifications	April 1996	June 1997
Feather River Fish Barrier Dam	Right abutment seepage investigation	January 1995	December 1995
Thermalito Afterbay Dam	Allowable pore pressure study	January 1995	December 1996
Delta Division			
Delta Levees	Install seismographs for seismic studies	June 1993	September 1995
Grant Line Canal	Temporary rock barrier	January 1995	August 1995
Sherman Island	Overland water supply	January 1995	September 1995
Old River and Middle River	Temporary rock barriers	October 1993	June 1995
North San Joaquin Division			
Delta Operations and Maintenance Center	Remodel vehicle storage buildings	August 1993	July 1995
South Bay Aqueduct	Memorandum Report: Del Valle Dam piezometer system	December 1993	July 1995
California Aqueduct	Report: cross drainage flood flows and cross drainage facilities	July 1994	July 1995
San Luis Division			
Dos Amigos Pumping Plant	Field installation, remote terminal units	July 1993	May 1996
Gianelli Pumping-Generating Plant	Seismic retrofit, access bridge	November 1994	July 1995
San Luis Dam	Piezometer installation	January 1995	December 1995
Coastal Branch Phase I			
Check 22 to Devil's Den Pumping Plant	Fiber optic cable installation	October 1994	August 1995
Tehachapi Division			
Edmonston Pumping Plant	Blast/paint facility	May 1995	September 1995
Edmonston Pumping Plant	Field installation, remote terminal units	July 1994	December 1996
Edmonston Pumping Plant	Replace 15 KV circuit breakers	March 1996	January 1997
Edmonston Pumping Plant	Replace 4 pumps	February 1996	January 1997
Edmonston Pumping Plant	Pump spare parts	February 1996	August 1996
Mohave Division			
California Aqueduct	Lining repairs mileposts 331.9, 334.7, and 344.14	March 1994	August 1995
Cedar Springs Dam	Sediment mitigation evaluation	January 1994	December 1996
Cedar Springs Dam	OP-29 high pore pressure evaluation	January 1995	December 1997
Mojave Siphon Powerplant	Valve vault completion and sitework	March 1996	December 1996
Santa Ana Division			
Devil Canyon Second Afterbay	Completion contract	April 1994	September 1995
Devil Canyon Powerplant	Field installation, remote terminal units	July 1994	May 1996
West Branch			
Gorman Creek	Erosion remediation	June 1992	September 1995
Oso Pumping Plant	Field installation, remote terminal units	February 1994	August 1995
Oso Pumping Plant	Add 20 ton trolley	February 1996	August 1996
Vaquero Recreation Area	Repair landslides	May 1994	December 1995
Castaic Dam	Evaluation, left abutment stability, static and dynamic loadings	June 1992	September 1995
Pyramid Dam	Concrete deterioration investigation	July 1995	December 1996

Construction activities during this reporting period included asphalt concrete road overlays, transporting and stockpiling rock for levee work, and providing floating campsites, boat ramps, and restroom facilities as described below.

Road Overlays. Asphalt concrete overlays for various Oroville Dam roads began in October 1995 and finished in June 1996.

Boat Ramp and Restroom Facilities. Contract work to reconstruct the existing Wilbur Road Boat Ramp and to construct restroom facilities at Monument Hill in the Thermalito Afterbay area began in November 1995 and was completed in June 1996.

Rock Transport. A contract to transport rock from a borrow area near the town of Oak Grove to six designated stockpile areas in the Oroville Wildlife Area was let in November 1995 and completed in January 1996.

Floating Campsites. Construction of 10 floating campsites for the Lake Oroville Recreation Area began in April 1996 and is scheduled for completion by September 1996. Each double-level unit features two decks with railings, stairway, camp table, sink, storage space, restroom, and holding tank.

Delta Facilities

Rock Barriers. For improved contract administration, the Department developed separate construction orders to permit construction of several barriers under a single contract. High water flows in spring 1995 allowed the Department to forego barrier construction for the spring.

The annual temporary rock barriers at Old River and Middle River were constructed in August 1995 and removed in October 1995. Barrier construction was accomplished under the new contracting method of including several barriers under one contract. A new contract to cover the 1995-96 season was let in March 1996. The Old River at the San Joaquin River barrier was constructed in early April 1996 and removed in May 1996. The Middle River barrier was installed in April 1996. Barrier installation in Old River (at the Delta Mendota Canal) and Grant Line Canal was accomplished in June 1996. Other barriers will be constructed as needed.

Suisun Marsh. Staff performed preliminary investigations for two designs to help reduce salinity in the western Suisun Marsh. One study investigated the possibility of pumping treated effluent from the Fairfield-Suisun Sewer Subregional Water Treatment Plant into Green Valley Creek. The other study looked into the possibility of obtaining water from the city of Benicia by tapping into an existing pipeline that runs along State Highway 680 and diverting the water into Goodyear Slough. Both studies involve the transfer of 10 to 20 cfs of water. Work included reconnaissance level design and cost estimates.

The Division helped the Department obtain environmental permits necessary to dredge the Morrow Island Distribution System and replace a turnout pipe. Work involved preparing contract drawings, specifications, and permit drawings. Construction of the turnout pipe is scheduled for September 1996. Dredging is postponed until 1997 because of delays in obtaining right-of-way and environmental permits.

Construction of the Grizzly Island Fish Screen in the Grizzly Island Wildlife Area of Suisun Marsh was completed in November 1995. The screen is intended to eliminate entrainment losses of fish when water is diverted from Montezuma Slough into Grizzly Slough.

Bids for a construction contract to repair seepage and alleviate settlement of the Montezuma Slough Salinity Control Gates were opened in June 1996. Work is scheduled to begin in August 1996.

Table 13-2
Construction Activities, July 1995 through June 1996, by Division

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Ending Date*	*Contract Costs (Thousands of Dollars)*
Oroville Division				
Lake Oroville	Construct floating campsites (96-03)	April 1996	September 1996	1,018
Oroville Dam	Overlay roads, asphalt concrete (95-26)	October 1995	June 1996	302
Oroville Wildlife Area	Transport rock (95-33)	November 1995	January 1996	367
Thermalito Afterbay	Improve boat ramp and construct restroom (96-30)	November 1995	June 1996	375
Delta Facilities	Construct temporary rock barriers 1994 and 1995: Middle River and Old River (94-01)	March 1994	October 1995	538
	Construct temporary rock barriers - 1996 and 1997: Middle River, Old River, and Grant Line Canal (96-02)	April 1996	December 1997	2,176
Suisun Marsh Facilities	Construct Grizzly Island fish screen facilities (95-01)	May 1995	November 1995	388
North San Joaquin Division				
California Aqueduct	Repair seepage (emergency), milepost 39.5 (95-34)	November 1995	March 1996	1,985
Delta Operations and Maintenance Center	Modify vehicle storage building (94-30)	February 1995	July 1995	160
	Modify Area Control Center HVAC (95-21)	July 1995	August 1995	43
	Construct building addition and modify electrical (95-31)	January 1996	September 1996	290
Banks Pumping Plant	Furnish spare coils (94-24)	November 1994	September 1996	470
Miscellaneous Activities				
Operating Road	Seal coat operating road (95-27)	October 1995	October 1995	228
South Bay Aqueduct				
South Bay Pumping Plant	Furnish 5kv switchgear (93-32)	January 1994	October 1995	843
San Luis Division				
California Aqueduct	Remove sediment: milepost 153.28 to Check 19 (96-04)	March 1996	June 1996	650
Dos Amigos Pumping Plant	Furnish automatic voltage regulator units-Units 1 through 6 (95-04)	June 1995	February 1997	400
Primary Operating Road	Seal coat primary operating road (95-22)	September 1995	September 1995	284
San Luis and Coalinga Operations and Maintenance Centers	Construct women's facilities additions and civil maintenance buildings (94-27)	December 1994	August 1995	204
Coastal Branch				
Phase 1				
Las Perillas and Badger Hill Pumping Plants	Furnish replacement switchgear and excitation system - Las Perillas and Badger Hill Pumping Plants (94-28)	November 1994	September 1996	713
Phase 2				
Cuesta Tunnel	Modify Cuesta Tunnel (94-10)	June 1994	August 1996	5,650
Pipeline	Construct pipeline Reach 1 (93-14)	December 1993	June 1996	28,650
	Construct pipeline Reach 2 (93-33)	March 1994	September 1996	36,720
	Construct pipeline Reach 3 (94-05)	June 1994	September 1996	28,050
	Construct pipeline Reach 4 (94-29)	January 1995	August 1996	29,200
	Construct pipeline reaches 5A1 and 5A2 (95-18)	August 1995	January 1997	56,782

Table 13-2
Construction Activities, July 1995 through June 1996, by Division (Continued)

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Ending Date*	*Contract Costs (Thousands of Dollars)*
Devil's Den, Bluestone, and Polonio Pass Pumping Plants	Furnish pump units (93-25)	December 1993	December 1996	3,953
	Construct pumping plants - initial (93-30)	January 1994	June 1996	21,100
	Furnish switchgear - Devil's Den, Bluestone, and Polonio Pass Pumping Plants (94-03)	July 1994	November 1995	2,119
	Furnish power transformers - Devil's Den, Bluestone, and Polonio Pass Pumping Plants (94-11)	July 1994	April 1996	1,009
	Furnish air chambers - Devil's Den, Bluestone, and Polonio Pass Pumping Plants (94-12)	July 1994	August 1996	3,300
	Furnish and install bridge cranes - Devil's Den, Bluestone, and Polonio Pass Pumping Plants (94-21)	September 1994	July 1996	2,112
	Complete construction - 3 pumping plants (94-31)	March 1995	November 1996	16,520
Tank Sites	Construct Tank 1 facilities (93-27)	December 1993	June 1996	25,500
	Construct Tank 2 facilities (95-02)	June 1995	September 1996	9,015
Valves	Furnish ball valves (93-34)	April 1994	December 1996	4,700
	Furnish butterfly valves and turbine bypass valve, Devil's Den Pumping Plant to Vandenberg AFB (94-06)	July 1994	September 1996	4,378
Miscellaneous				
	Furnish power circuit breakers and switchyard equipment - Devil's Den to Casmalia (94-04)	July 1994	December 1996	726
	Furnish engine generator sets - Las Perillas Pumping Plant to Lopez Turnout (95-03)	June 1995	August 1996	793
	Furnish acoustic velocity flowmeters - Devil's Den to Valve Vault Facility (95-05)	June 1995	August 1996	400
	Fiber optic cable installation (95-11)	August 1995	January 1996	401
South San Joaquin Division				
Chrisman Pumping Plant	Furnish stator coils (92-11)	July 1992	October 1996	582
Operating Road	Seal coat primary operating road (96-05)	June 1996	July 1996	186
Miscellaneous	Construct warehouse - Lost Hills Operations and Maintenance Subcenter (94-34)	April 1995	July 1996	360
Tehachapi Division				
Edmonston Pumping Plant	Furnish motor stator coils (93-01)	April 1993	August 1995	922
	Modify visitor's center (94-35)	April 1995	September 1995	130
	Construct blast paint facility (95-14)	October 1995	September 1996	1,755
West Branch				
Gorman Creek	Construct erosion protection (95-29)	October 1995	November 1995	269
Lower Quail Canal	Construct seepage control blanket (95-19)	October 1995	November 1995	497
Pyramid Dam	Remedied spillway (95-15)	April 1996	September 1996	1,100
Mojave Division				
California Aqueduct	Repair seepage, mileposts 331.89, 334.02, 334.64, and 344.95 (95-25)	September 1995	December 1995	1,377

Table 13-2
Construction Activities, July 1995 through June 1996, by Division (Continued)

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Ending Date*	*Contract Costs (Thousands of Dollars)*
Alamo Powerplant	Furnish and install Kaplan turbine (80-16)	October 1980	April 1996	2,767
	Furnish and install generator No. 1 (83-14)	August 1983	June 1996	2,386
Mojave Siphon Pipeline	Construct Mojave Siphon second pipeline (91-33)	March 1992	June 1996	50,000
	Revegetate (95-23)	October 1995	January 1997	201
Mojave Siphon Powerplant	Furnish and install turbines, generators, and governors (89-13)	August 1989	July 1996	14,600
	Furnish and install butterfly valves - Mohave Siphon and Devil Canyon powerplants (91-15)	August 1991	July 1997	4,451
	Furnish power transformer (92-15)	December 1992	July 1995	403
	Complete powerplant (92-30)	February 1993	January 1996	7,800
	Furnish and install acoustic velocity flowmeters (93-18)	October 1993	July 1997	437
Pearblossom Pumping Plant Enlargement, Phase II	Furnish and install vertical centrifugal pumps (87-04)	May 1987	December 1996	2,800
	Furnish and install pump discharge valve units (88-18)	July 1988	November 1995	1,655
Santa Ana Division				
East Branch Enlargement				
Devil Canyon Powerplant	Furnish and install turbines, governors, and valves (87-15)	July 1987	July 1997	10,200
San Bernardino Tunnel	Reconstruct intake (95-07)	July 1995	May 1997	25,400
Santa Ana Valley Pipeline	Excavate, inspect, and repair (95-20)	September 1995	January 1996	845
Miscellaneous Activities	Furnish and install above-ground fuel storage tanks - Pearblossom Operations and Maintenance Subcenter, Southern California Operations and Maintenance Center, Oso Pumping Plant, and Cedar Springs Dam Maintenance Station (93-11)	December 1993	February 1995	393
	Remove underground storage tank - San Joaquin and Southern Field Divisions (94-02)	April 1994	December 1995	191
	Furnish and install above-ground fuel storage tanks - San Luis Operations and Maintenance Center, Coalinga Operations and Maintenance Subcenter, and Delta Operations and Maintenance Center (94-07)	May 1994	September 1995	550
	Replace roof, Lost Hills Operations and Maintenance Subcenter and Oso Pumping (95-13)	August 1995	November 1995	175

North San Joaquin Division

The Division completed a report updating hydrologic and hydraulic data for cross-drainage flood flows and cross-drainage facilities along the north San Joaquin reach of the California Aqueduct. The report presents descriptions of the watershed and cross-drainage facilities, hydraulic design criteria for the cross-drainage facilities, methods used in selecting design rainfall and design floods, and hydrologic modeling and flood routing of flows with return periods of 100 years and 500 years.

There are 90 drainage facilities along this reach of the aqueduct with over 445 square miles of drainage

area, not including the 2 major drainage areas crossing at canal siphons.

Division staff assisted Operations and Maintenance Field Division with ADA facility review of new Division facilities.

Construction activities completed and currently in progress during this reporting period are described below.

Delta Operations and Maintenance Center. Construction of above-ground fuel tanks, which replaced underground tanks at the Delta O&M Center, began in May 1994 and was completed in September 1995.

In February 1995, the Department awarded a construction contract to add air-conditioned office space to the existing vehicle storage building. The contractor also removed asbestos from the building. The work was completed in August 1995.

Work to modify the Delta Area Control Center HVAC system was started in July 1995 and completed in August 1995.

A contract to perform building modifications to the existing Delta Area Control Center, including electrical system modifications and the addition of a concrete block battery room, was awarded in January 1996 and is scheduled to be completed in September 1996.

Banks Pumping Plant. The contract to furnish spare coils for the Banks Pumping Plant motor units, which was awarded in October 1994 with a completion date in September 1995, ran into manufacturing problems that delayed progress on this contract. It is now estimated the work will be completed in September 1996.

Road Seal Coating. A contract to seal coat approximately 43 miles of primary aqueduct operating roads was awarded in September 1995; the work was completed within a month.

South Bay Aqueduct. Civil Design completed a memorandum report recommending that the twin tube hydraulic piezometer system in Del Valle Dam be abandoned. Engineers wrote the report in response to the 1990 Director's Board recommendation to develop and document rationale supporting the decision to abandon the piezometer system.

South Bay Pumping Plant. A contract to furnish 5 kV switchgear equipment for the South Bay Pumping Plant was let in January 1994; the work was completed in early 1995.

Design of the Del Valle Waste Area Remediation was completed in April 1996 and the contract was awarded June 17, 1996. Construction should be completed in October 1996.

Emergency Aqueduct Repair. During the week of October 16, 1995, large cracks appeared in various areas on both sides of the canal embankment at milepost 39.5, and a large sink hole developed in the secondary-road side of the embankment. Inspection by departmental divers revealed large cracks in the canal concrete lining; an emergency repair contract was awarded immediately on October 16. O&M forces dewatered the canal reach to allow the contractor to start work. The major repair effort was completed December 27, 1995, and the canal reach was turned over to the Delta Field Division to restore water flows.

San Luis Division

Design of an oil containment system for Dos Amigos Pumping Plant will be completed in fall 1995, with construction expected in spring 1996. Design modifications to the access bridge at the Gianelli Pumping-Generating Plant will be completed in fall 1995. These modifications will increase the stability of the bridge during an earthquake.

Civil Design completed a feasibility study evaluating east-side flood control alternatives to protect the California Aqueduct at Arroyo Pasajero.

Design for the repair of damage to the concrete lining of the California Aqueduct at Cantua Creek and Arroyo Pasajero will be completed in spring 1997. The concrete lining was damaged when flood flows during heavy storms in March 1995 overtopped the embankment. (See Chapter 12.)

Division staff assisted O&M Field Division with ADA surveys required at the O&M Center, Romero Visitor Center, Gianelli Pumping-Generating Plant, and Dos Amigos Pumping Plant.

San Luis Dam. Division Staff, in conjunction with USBR, installed two vibrating wire and two standpipe piezometers in San Luis Dam. These instruments will provide additional information regarding the pore pressure levels within the dam.

The following are brief descriptions of construction activities completed or currently in progress in the San Luis Construction Division.

San Luis Operations and Maintenance Center and Coalinga Operations and Maintenance Sub-Center. Work on a contract to install above-ground fuel tanks replacing those removed under an earlier contract was completed in September 1995. This work was located at the San Luis O&M Center and the Coalinga O&M Sub-Center.

The contract to construct women's locker room and restroom facilities at the San Luis and the Coalinga O&M Centers was completed in August 1995.

Dos Amigos Pumping Plant. Furnishing automatic voltage regulators for units 1 through 6 at Dos Amigos Pumping Plant continued in progress with completion expected in February 1997. This contract was extended to provide additional services of an erecting engineer for the installation of the last 3 units.

Operating Road Seal Coating. A contract to seal coat about 64 miles of primary Aqueduct operating roads, milepost 108.7 to Kettleman City, was awarded in August 1995 and completed within 30 days.

Sediment Removal. A contract to remove built-up sediment deposits from the Edmund G. Brown California Aqueduct from milepost 153 to Check No. 19 was awarded in March 1996 and completed in June 1996. The work consisted of removing the sediment deposits from the canal bottom by suction dredging methods and depositing the material in stilling ponds constructed adjacent to the aqueduct. Additional sediment removal may be performed in the future.

Coastal Branch

Construction at the Phase I facilities was limited to replacement of switchgear at the Las Perillas and Badger Hill pumping plants. The contract for this equipment was awarded in October 1994. Contract completion is expected by September 1996.

Construction activities on the Coastal Branch Phase II were at the peak of activity during this reporting period. All 23 construction contracts have been awarded and work in progress is noted below. Construction contracts for the new Coastal Branch Phase II facilities are administered by the Coastal Project Headquarters in San Luis Obispo. Field offices in Shandon and Arroyo Grande support the project office in San Luis Obispo.

Pipeline Reaches. Reach 1: All work has been completed and a final inspection will be conducted in July 1996. Reach 2: Work on this contract continued in progress and is about 95 percent complete; completion is expected by September 1996. Reach 3: Work on this reach is 99 percent complete as of June 30, 1996; completion is expected by September 1996. Reach 4: All pipe has been installed with backfilling operations in progress. Work continues on Calf Canyon Tunnel. Reach 4 is overall 92 percent complete, with completion expected by September 1996. Reach 5A1 and 5A2: Pipe laying, backfilling operations, and work on West Corral de Piedra Tunnel are in progress. The work on this reach is about 46 percent complete, with completion expected by January 1997.

Tank 1 - Polonio Pass. All major construction work for the Tank 1 - Polonio Pass complex was completed by June 30, 1996, with only minor punch list items to be completed.

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.

Work on the three pumping plants under the completion contract is currently in progress and is about 70 percent complete as of June 30, 1996. It is estimated that the work will be completed in November 1996.

Cuesta Tunnel. Modification work for Cuesta Tunnel is 99 percent complete as of June 30, 1996. Completion is expected by August 1996.

Tank Site 2. Work on construction of the tanks at Calf Canyon continued in progress with 58 percent of the work completed. Completion is anticipated by September 1996.

Air Chambers. Erection of the air chambers at Devil's Den, Bluestone, and Polonio Pass pumping plants is essentially complete. Overall completion on this construction is 99 percent. Completion is expected by the end of August 1996.

Equipment. The manufacturing and delivery of bridge cranes, pumps, motors, transformers, fiber optic cable, switchgear, switchboards, valves, and other appurtenant equipment is essentially completed and delivered to the job sites. Installation of the equipment is in various stages of completion.

South San Joaquin Division

Division staff assisted O&M Field Division with ADA facilities review at the O&M Center and Lost Hills Subcenter.

Design for raising the concrete lining on a 1.8-mile reach of the California Aqueduct was completed. Construction is scheduled for completion in December 1996.

Construction work completed or currently in progress in this division is as follows:

Chrisman Pumping Plant. Stator coils manufacturing began under a contract awarded in July 1992. Work continues and is approximately 95 percent complete. Completion is expected in October 1996.

Lost Hills Operations and Maintenance Subcenter. Construction of a warehouse at this facility is expected to be completed in July 1996.

A contract to replace the Lost Hills O&M Subcenter roof was awarded in August 1995 and completed in November 1995.

Seal Coat Operating Roads. A contract to seal coat 37 miles of aqueduct operating roads in Kern County west of Bakersfield was awarded in June 1996; work was completed in July 1996.

Tehachapi Division

Design was completed to repair a portion of the Pastoria Access Road damaged by a landslide. Construction is scheduled for early 1997.

Division staff assisted O&M Field Division with ADA facilities review at Edmonston Pumping Plant.

Construction work completed or in progress in this Division during this reporting period is as follows:

Edmonston Pumping Plant. Manufacture and delivery of motor coils for the pumping plant motors was completed in August 1995.

Edmonston Visitor's Center modifications, which separated the visitor's area from the pump bay, were completed in September 1995 under a contract awarded in March 1995. Modifications include construction of a visitors' seating area and a sound wall to accommodate displays.

Construction of a blast-paint facility began in January 1996 and is expected to be completed by September 1996.

Mojave Division

Design was completed for the repair of three areas of the California Aqueduct, at mileposts 331.9, 334.07, and 344.14, where severe cracking occurred. Construction is scheduled to begin in September 1997 and be performed during two scheduled outages.

Cedar Springs Dam. An evaluation of the sediment migration into the drainage gallery concluded that the random backfill placed upon the toe of the dam is the primary source of the sediment. Staff recommended that the Department monitor the sediment accumulation and consider installation of a geotextile liner at the downstream toe to mitigate against the sediment migration.

An evaluation was performed to determine if groundwater conditions are influencing the high pore pressure readings at open standpipe piezometer OP-29, as recommended by the 1993 Director's Safety Review Board. No unusual groundwater conditions were

noted. It is believed that rainfall infiltration is the source of the abnormally high pressure readings. Southern Field Division personnel will perform a surface repair at this piezometer in the summer of 1996.

Division staff assisted O&M Field Division with ADA facility review at Pearblossom O&M Subcenter.

Construction activities in the Mojave Division are described below.

Seepage Repairs. A contract to repair seepage in several areas of the East Branch aqueduct at mileposts 331.89, 334.02, 334.64, and 334.95 was awarded in September 1995. The repair work was carried on around the clock and was completed in December 1995.

Alamo Powerplant. Corrective work to the turbine shaft to minimize vibration was successful; the turbine and generator contracts were completed in April and June 1996, respectively.

Mojave Siphon. Construction of the Mojave Siphon second pipeline was completed in June 1996.

A contract to perform revegetation work over the buried pipeline was awarded in September 1995 and completed in January 1996. A 1-year plant establishment period will extend the contract completion date to January 1997.

Mojave Siphon Powerplant. Construction of the Mojave Siphon Powerplant was completed in January 1996, except for minor punch list items.

Installation and operational testing of the three new turbines and generators along with associated equipment is essentially complete. The three units should be ready for commercial operation in July 1996. Final testing of the acoustic velocity flowmeters at this facility cannot be accomplished until Silverwood Lake returns to normal water levels; the lake water level was lowered to facilitate construction of the San Bernardino Tunnel Intake.

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 the bypass vault were ordered and have been fabricated and delivered; installation will be delayed until powerplant testing is complete. Contract completion is expected by July 1997.

Pearblossom Pumping Plant. All contract work for this facility has been completed with the exception of the pump contract. As of June 30, 1996, the pump units were operational yet leaking. Repairs are in progress. The contract will not be accepted until the leakage problem is resolved.

Santa Ana Division

Sitework at Devil Canyon Powerplant. Contract documents were prepared for improving Bailey Creek Channel, constructing a debris basin, widening and extending Ohio Avenue, constructing a building for the water quality unit, paving around the powerplant, constructing a parking lot, and miscellaneous erosion control measures. Construction is expected to begin in fall 1996.

East Branch Extension. Preliminary design and cost estimates were prepared for a feasibility study to extend the East Branch of the California Aqueduct to Cherry Valley. The project will include about 14 miles of new pipeline, two pump stations, and a small reservoir. Final design is expected to begin in September 1996.

Division staff assisted O&M Field Division with ADA facility review.

Construction activities in this division during this reporting period include the following:

San Bernardino Tunnel Intake. Reconstruction of the San Bernardino Tunnel intake to comply with current seismic code requirements started in July 1995. As of June 30, 1996, work was about 35 percent complete. Completion is scheduled for May 1997.

Devil Canyon Powerplant. All contracts for this facility with exception of the turbine and generator contracts have been completed and accepted. The

turbines were rejected because they do not meet the operational criteria. The problem is being addressed by the Department and the manufacturer. Completion is expected by July 1997.

Santa Ana Pipeline. A contract to inspect and repair designated areas of the Santa Ana Pipeline was awarded in September 1995. The work was completed in January 1996.

West Branch

Design work to repair landslides and other minor damage at the Vaquero Recreation Area at Pyramid Reservoir was completed with construction currently scheduled for fall 1996. Staff completed a study of alternative conveyances to bypass the Peace Valley Pipeline and/or Warne Powerplant. Work included installation of a subsurface drain seal to eliminate ongoing subsurface erosion along the Peace Valley Pipeline. A cursory study of alternatives to remove silt deposited in the tail race channel below the Warne Powerplant was completed.

Design was completed to repair portions of the Quail Lake Access Road. Construction is scheduled for spring 1997.

An evaluation of the concrete deterioration in the outlet works was performed at Pyramid Dam, as recommended by the 1995 FERC and Director's Safety Review Boards. Preliminary review indicated that the deterioration is primarily the result of salt crystallization and does not impact the safety of the structure. A memorandum report summarizing the results of the testing program will be completed by December 1996.

Gorman Creek. Design work began on remediation of active, deep erosion gullies along Gorman Creek. Final design is expected to be completed in fall 1995; construction is anticipated to be completed prior to the rainy season. Design work also continued on measures to protect State facilities from large flows in Gorman Creek.

Castaic Dam. Civil Engineering completed a draft memorandum report documenting the stability evaluation of Castaic Dam's left abutment. The report concluded that the abutment is stable for both static and dynamic loading conditions.

Division staff assisted O&M Field Division with ADA facilities review for the Castaic O&M Center and Vista del Lago Visitor Center.

Construction activities on the West Branch included the following:

Oso Pumping Plant. A contract to replace the pumping plant roof was awarded in August 1995 and completed in November 1995.

Gorman Creek. An erosion protection system was constructed in the Gorman Creek channel northwest of the Smokey Bear Road interchange. Construction, which included a geotextile liner beneath a rock-lined channel and a stilling basin, began in October 1995 and was completed within a month.

Lower Quail Canal. To control seepage through and under the lower canal embankment, a contract was awarded in August 1995 for construction of a seepage blanket and appurtenant features. The work was completed in November 1995.

Pyramid Dam. In April 1996, a contract was awarded for remedial work on the Pyramid Dam spillway. The remedial work is in progress with contract completion expected in September 1996.

Miscellaneous

Division staff are inspecting and reanalyzing the radial gates on the Department's dams. The inspections have been performed by climbing teams trained by Caltrans personnel. A final report summarizing the inspection and structural evaluations of the gates will be completed by June 1997.

Fuel Storage Tanks. A contract to furnish and install above-ground fuel storage tanks at Pearblossom O&M Subcenter, Southern California O&M Center, Oso Pumping Plant, and Cedar Springs Dam Maintenance Station was awarded in December 1993 and completed in February 1995.

Underground storage tanks in the San Joaquin and Southern Field Divisions were removed under a contract completed in December 1995.

Right of Way Activities

The Department spent a net total of $237.0 million to acquire rights-of-way and mitigation lands for the SWP from inception to June 30, 1996. In fiscal year 1995-96, the Department:

- acquired two parcels (approximately 361.78 acres) in fee for a total purchase price of $948,025;
- acquired easement rights over 64 parcels (576.28 acres) for a total price of $1,603,579; and
- managed 89 leases for a total revenue of $675,433.

No surplus property was sold.

Coastal Branch, Phase II

To date, the Department has secured all rights required for construction. In fiscal year 1995-96, the Department:

- obtained 22 temporary entry permits for geological, archaeological, and environmental studies and surveys for project design and regulatory permits; and
- obtained easements (576.28 acres over 64 parcels) for pipeline, temporary construction, electrical transmission lines, and access roads at a cost of $1,603,579.

In addition to departmental actions, the California Water Commission approved Resolutions of Necessity for 20 parcels, enabling the Department to continue with condemnation proceedings.

Tuolumne River Restoration

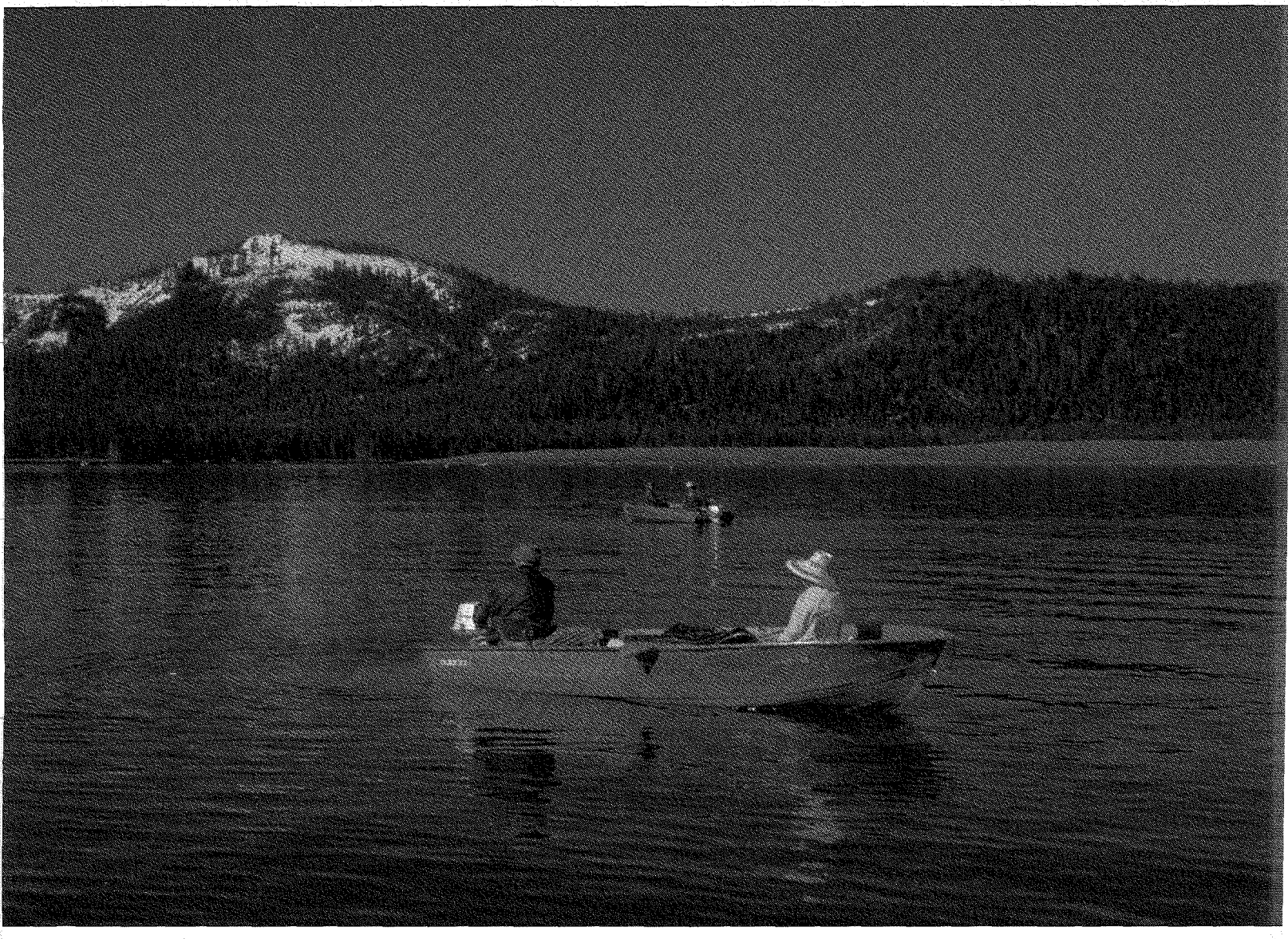
As partial mitigation under the "Three Pumps Agreement," the Department acquired one parcel in fee (40.14 acres) for $225,000.

West Delta Program–Sherman Island

The Department purchased one parcel (321.34 acres) for a total cost of $723,025. The Department now owns more than 6,000 acres of the 10,000-acre island and continues to negotiate with three willing sellers to purchase additional parcels.

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

Chapter 14
Recreation



Recreationists at Lake Davis in Plumas County

Significant Events

- On Saturday, June 3, 1995, East Bay Regional Park District held a "25th Birthday Splash" at Lake Del Valle State Recreation Area to celebrate the SRA's 25th anniversary. The event also honored 25 years of interagency cooperation between EBRPD, the Department, and the Department of Parks and Recreation. EBRPD operates Del Valle in cooperation with the two State agencies. Activities included a fishing derby; art groups performances; a kids' play area with games, face painting, and a petting zoo; boat tours; historical displays; and barbecue lunch service.

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, sight-seeing, 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 14-1 shows the names and locations of each area.

Recreation-Days

In 1995, SWP facilities received 4.94 million recreation-days of use, a slight increase from the 4.75 million recreation-days recorded in 1994 (Table 14-1). Recreation use at the 17 developed fishing access sites and along the California Aqueduct Bikeway remained about the same as in 1994.

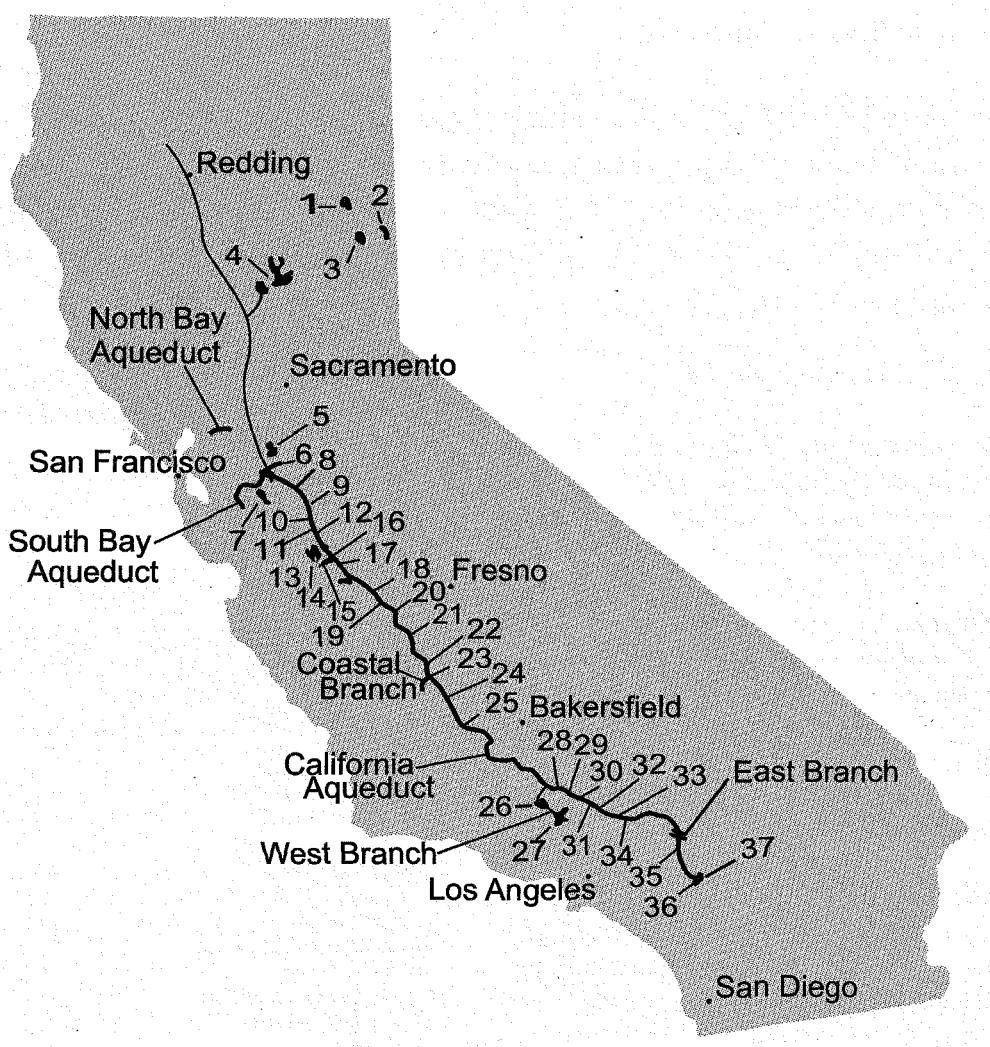
Most SWP recreation and visitor use was concentrated at the major reservoirs, where well-developed facilities accommodate the public. More than 50 percent of the total SWP recreational use in 1995 occurred at the four major reservoirs in Southern California: Pyramid Lake, Castaic Lake, Silverwood Lake, and Lake Perris.

Since the SWP first began delivering water in 1962, more than 135 million recreation-days have been recorded at SWP recreational facilities.

Table 14-1
Recreation-Days Recorded in 1995, by Division and Facility

Division	*Number of Days*
Oroville Field Division	
Frenchman Lake	203,100
Antelope Lake	69,500
Lake Davis	249,800
Lake Oroville and Thermalito Forebay	579,000
Thermalito Afterbay and Oroville Wildlife Area	216,000
Total	1,317,400
Delta Field Division	
Lake Del Valle	416,700
Bethany Reservoir	37,700
Fishing Access Sites:	
Neils Hansen	100
Cottonwood Road	100
California Aqueduct:	
Walk-In Fishing	13,900
Bikeway	1,000
White Slough Wildlife Area	11,700
Total	481,200
San Luis Field Division	
San Luis Reservoir	197,000
O'Neill Forebay	346,800
Los Banos Reservoir	49,200
California Aqueduct:	
Walk-In Fishing	13,600
Wildlife Areas	8,500
Total	615,100
San Joaquin Field Division	
Fishing Access Sites:	
Kettleman City	1,800
Lost Hills	1,700
Buttonwillow	1,900
California Aqueduct:	
Walk-In Fishing	10,800
Total	16,200
Southern Field Division	
Silverwood Lake	326,600
Lake Perris	1,310,000
Pyramid Lake	300,000
Castaic Lake	574,400
Fishing Access Sites:	
77th Street East	600
Longview Road	100
California Aqueduct:	
Walk-In Fishing	2,200
Bikeway	400
Total	**2,514,300**
Grand Total	**4,944,200**

[1]According to the Davis-Dolwig Act (1961, *Water Code* sections 11900-11925), the Department has overall responsibility to acquire land, plan recreation, and ensure that enhancement of fish and wildlife habitat is included as part of the State Water Project, 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.



1. Antelope Lake Recreation Area
2. Frenchman Lake Recreation Area
3. Lake Davis Recreation Area
4. Lake Oroville State Recreation Area
5. White Slough Wildlife Area
6. Bethany Reservoir
7. Lake Del Valle State Recreation Area
8. Bikeway from Bethany Reservoir to O'Neill Forebay (70 miles)
9. Grant Line Road Fishing Access Site
10. Niels Hansen Fishing Access Site
11. Orestimba Fishing Access Site
12. Walk-in Fishing (63 miles)
13. Cottonwood Road Fishing Access Site
14. San Luis Reservoir State Recreation Area
15. 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 (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

Figure 14-1
Names and Locations of SWP Recreational Areas

Facility Planning

During 1995, the following recreation planning activities were completed:

- Draft Interim North Delta Recreation Reconnaissance Study. In planning for the Interim North Delta Program, The Department surveyed and analyzed the current recreational use of the Delta within the INDP area. To mitigate for potential project impacts on recreation and to comply with the Davis-Dolwig Act, the Department explored the feasibility of new recreational development opportunities. The draft report was completed in July 1995.
- *Quail Lake Recreation Development Plan.* This report plans for further recreation development at Quail Lake (a SWP facility) and presents ways to control and manage increased use while reducing vandalism and destruction of SWP facilities and property.
- East Bay Regional Park District completed its final plans and specifications for development of the 5-mile-long Del Valle Northeast Shore Fire Trail. EBRPD operates and maintains the recreational facilities within the Lake Del Valle properties. The Department reviewed and commented on the plan and continues to assist EBRPD in meeting its 1996 completion schedule.

New Facilities

The following new facilities were completed at Lake Oroville:

- Restrooms were constructed on the left abutment of Oroville Dam.
- Lights were installed along the dam road.
- Water and sewer lines were installed across the dam for future spillway area restroom expansion.
- A swimming beach and picnic area with tables and trees were added at the South Forebay area, as well as road and parking area improvements.
- An equestrian group camping area was developed and opened for public use at the Loafer Creek area.

Recreation Financing

Recreational facilities are financed according to legislation enacted by the Davis-Dolwig Act (1961), Assembly Bill 12 (1966), and Assembly Bill 1441 (1989).

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 through which the Department was to be reimbursed for those project costs allocated to recreation and fish and wildlife enhancement and for costs of acquiring property for recreation development.

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

Assembly Bill 12 provided for a $5 million annual appropriation from tideland oil and gas revenues for joint 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 funding joint capital costs and recreational land purchases.

Assembly Bill 1442, known as the "Offset Legislation," offsets moneys owed the California Water Fund by the SWP with reimbursements owed the project by the General Fund under the Davis-Dolwig Act.

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.

Improvements to Facilities

The following improvements were made at Lake Oroville during 1995 to help meet recreational demands:

- The concrete overlay on the boat launch ramp was completed in September at the Bidwell Canyon area;
- Construction began on rehabilitation of the Lime Saddle boat launching facility; and
- Three additional floating restrooms were added on the lake.

These improvements were provided with direction and funding from the Department of Boating and Waterways. In addition, another section of the mountain bike trail was completed, making the total trail length at the Lake Oroville State Recreation Area 41 miles.

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, but never fully implemented. 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. Elements being developed or already completed include:

- Duck brood pond was completed and construction began on restroom and picnic facilities construction at Thermalito Afterbay. Buoys were deployed around water ski slalom course.
- Construction began on 41-mile bike trail.
- Construction began on Lime Saddle Boat Ramp improvements (Department of Boating and Waterways), equestrian campground at Loafer Creek Recreation area, and lighting on Oroville Dam.

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 1995, the Department of Fish and Game continued its fish-planting activities at 10 SWP facilities and 1 facility, Lake Skinner, owned by the Metropolitan Water District of Southern California. Total plantings of trout and chinook salmon decreased by 16 percent in 1995 (Table 14-2).

At the Feather River Fish Hatchery and the Thermalito Afterbay rearing ponds, 16,496,100 fish were produced in 1995, down 36 percent from 1994. That figure includes 15,663,000 chinook salmon and 833,100 steelhead trout. Of the chinook salmon reared, 9,170,200 were fingerlings, and 6,492,800 were advanced fingerlings. Of the steelhead reared, 312,000 were fingerlings, and 521,100 were yearlings.

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.

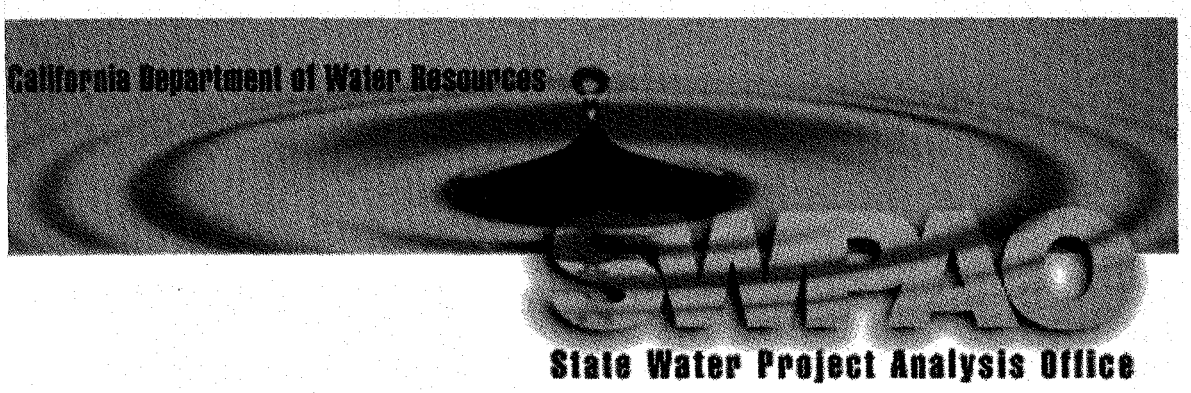
Table 14-2
Fish Planted in 1995 (Thousands)

Location and Size	Trout			Chinook Salmon	Total
	Eagle Lake	Rainbow	Brown		
Antelope Reservoir					
Catchable		4.6			4.6
Lake Davis					
Catchable	21.5				21.5
Frenchman Reservoir					
Fingerling		280.8			280.8
Lake Oroville					
Catchable			15.0	90.0	105.0
Subcatchable				101.9	101.9
Thermalito Forebay					
Catchable		40.2			40.2
Lake Del Valle					
Catchable		40.1			40.1
Los Banos Reservoir					
Catchable		12.4			12.4
Pyramid Lake			No Fish Planted		
Castaic Lake					
Catchable		35.9			35.9
Castaic Lagoon					
Catchable		45.5			45.5
Silverwood Lake			No Fish Planted		
Lake Perris					
Catchable		71.1			71.1
Lake Skinner (a					
Catchable		68.0			68.0
California Aqueduct			No Fish Planted		
Total	**21.5**	**598.6**	**15.0**	**191.9**	**827.0**

a) Included in SWP fish planting program, but not a SWP facility.

Chapter 15

Financial Analysis



SWPAO General Information

Water Acquisition and Transfer

Project Coordination

Water Rights and State-Federal Water Contract Activities

SWP Water Contracts

SWP Cost Allocation and Repayment

Power Supplies Program

Publications and Other Information

What's New!

The State Water Project Analysis Office Homepage, which includes financial data, is on the World Wide Web at http:\\wwwswpao.water.ca.gov.

Significant Events

- On December 5, 1995, the Department sold $335 million Water System Revenue Bonds, Series O. The proceeds were used to provide long-term financing of construction expenditures, pay for bond financing costs, and retire $152 million of variable rate Water System Revenue Bonds, Series N. The retirement of variable rate Series N bonds allowed the Department to obtain a favorable long-term fixed rate of 5.237 percent.
- On May 7, 1996, the Department sold $160 million long-term Water System Revenue Bonds, Series P. The proceeds were used to provide long-term financing of construction expenditures and pay for bond financing costs.

This chapter presents both a summary and a detailed explanation of the SWP current financial analysis, capital costs and requirements, revenues and expenses, and bond activities for years 1996 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 June 30, 1996, are presented in Tables 15-1 and 15-2 (see pages 197 and 198).

Future conditions may change the financial analysis. Contingencies that could change the financial analysis 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 $596 million. Special capital requirements for revenue bond financing of these construction costs are projected at $86 million for a total capital requirement of $682 million. This projection includes construction and financing costs for the following significant SWP facilities planned for completion by 2010:

- Coastal Branch of the California Aqueduct;
- Suisun Marsh Facilities;
- North and 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 $455 million of revenue bonds. The remaining $227 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 15-1 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 15-1 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 of Water Resources. 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 15-3.

Capital Requirements

Lines 1 through 19 in Table 15-1 show actual and projected SWP capital requirements through 2010. Estimates of future capital expenditures include allowances for escalation of costs from 1996 through 2010 at 3 percent per year for construction costs and

Table 15-3
Allocation of Capital Expenditures
(Thousands of Dollars)

Facilities and Construction Division	Expenditures Incurred Through 1995	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	17,895	0	17,895	1,372	0	16,523	0
Oroville Division	562,625	196	562,821	475,838	70,661	16,322	0
Delta Facilities Division	304,870	117,297	422,167	391,105	0	30,657	0
North Bay Aqueduct	94,362	2,318	96,680	96,680	0	0	0
South Bay Aqueduct	79,883	171	80,054	58,386	7,519	14,149	0
California Aqueduct							
North San Joaquin Division	256,895	10,652	267,547	258,375	0	9,172	0
San Luis Division	244,390	437	244,827	236,503	0	8,324	0
South San Joaquin Division	302,316	399	302,715	285,460	0	17,255	0
Tehachapi Division	320,629	183	320,812	302,526	0	18,286	0
Mojave Division	328,858	4,125	332,983	314,003	0	18,980	0
Santa Ana Division	283,590	24,535	308,125	290,426	0	17,699	0
West Branch	530,177	14,293	544,470	513,435	0	31,035	0
Coastal Branch	273,071	197,125	470,196	470,196	0	0	0
Subtotal, California Aqueduct	2,539,926	251,749	2,791,675	2,670,924	0	120,751	0
Other Project Facilities							
Small Hydroelectric Power Generating Facilities	89,365	121	89,486	89,486	0	0	0
Off-Aqueduct Power Generating Facilities	441,245	18,000	459,245	459,245	0	0	0
East Branch Enlargement	428,092	8,105	436,197	436,197	0	0	0
East Branch Extension	0	41,630	41,630	41,630	0	0	0
San Joaquin Drainage Facilities	50,869	43,482	94,351	0	0	0	94,351
Planning and Preoperations	8,740	110,423	119,163	119,163	0	0	0
Unassigned	305	0	305	0	0	0	305
Subtotal, Project Construction Expenditures	4,618,177	593,492	5,211,669	4,840,431	78,180	198,402	94,656
Other Capital Requirements							
Davis-Grunsky Act Program	127,543	2,457	130,000	0	0	0	130,000
Total Capital Expenditures	**4,745,720**	**595,949**	**5,341,669**	**4,840,431**	**78,180**	**198,402**	**224,656**

a) Reflects the Department's allocation to this purpose, irrespective of federal payments.
b) Includes costs currently unassigned to other purposes; for example, planning costs of deleted features of project facilities, initial costs of inventoried items, joint costs assigned to the federal government, and costs assigned to Davis-Grunsky Act Program.

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 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. Completion of Phase II is currently scheduled in the spring of 1997 at a cost of $452 million.

Line 6, West Branch Aqueduct, shows costs for all facilities on the West Branch except Warne Powerplant. Costs for Warne Powerplant are included in Line 9. Projected costs include approximately $13 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 power plant costs at Mojave Siphon and Devil Canyon. (The remaining power plant costs are included in Line 9.) Estimated East Branch Enlargement costs by facility are presented in Table 15-4. 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. Costs for power plant construction at Mojave Siphon and Devil Canyon are not included in this line. Projected costs include $27 million for reconstruction of the San Bernardino Tunnel Intake.

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 in the vicinity of Beaumont, Riverside County. The extension would 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 and Mojave Siphon power plants shown in Line 7 of Table 15-1. Esti-

mated capital costs for facilities included in Line 10 are shown in Table 15-5.

Line 11, Additional Conservation Facilities, shows projected costs for financial analysis purposes and planning additional conservation facilities. Line 11 includes estimated CALFED program costs for 1998 through 2000 for preliminary planning and environmental impact report preparation. Specific planning activities and projected spending amounts for 1996 through 2010 are shown in Table 15-6. 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, 1995, the Department had disbursed $129 million (including $9 million for administration) in grants and loans for local agencies throughout the State. Funds for Department projects currently authorized will be disbursed prior to 1997.

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 15-7.

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 State Water Project was constructed with three general types of financing: Burns-Porter, revenue bonds, and capital resources. Lines 20 through 33 of Table 15-1 present specific information about those sources of financing.

Burns-Porter Act. Burns-Porter financing is derived from the sale of California Water Resources Development Bonds (general obligation bonds) and State Tideland Oil Revenues deposited in the California Water Fund as authorized by the Burns-Porter Act (Water Code sections 12930-12944), approved by voters in November 1960. The Burns-Porter Act authorized an issue of $1.75 billion of general obligation bonds of the State, which are repaid by revenues received according to the water supply contracts. Of that authorization, $130 million 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-

Table 15-4
Estimated Costs for East Branch Enlargement

Facility	*Dollar Amounts (in millions)*
Aqueduct and siphons	$129.3
Pearblossom Pumping Plant	65.1
Alamo Powerplant	5.0
Mojave Siphon Powerplant	43.9
Devil Canyon Powerplant and Second Afterbay	192.8
Total	**$436.1**

Table 15-5
Estimated Capital Costs for Power Generation and Transmission Facilities

Facility	*Dollar Amounts (in millions)*
Power Plants	
Reid Gardner, Unit 4	$281.8
Bottle Rock	120.9
South Geysers	49.6
Devil Canyon	36.8
Warne	84.5
Alamo	44.6
Mojave Siphon	30.7
Thermalito Diversion Dam	14.2
Subtotal	$663.1
Transmission Lines	
Midway-Wheeler Ridge	$ 10.7
Geysers-Lakeville	6.9
Total	**$680.7**

Table 15-6
Estimated Costs for Planning Additional Conservation Facilities

Activity	*Project Expenditures (in millions)*
Los Banos	$ 6.5
Future Water Supply	81.5
Other Planning Costs	20.3
Total	**$108.3**

Grunsky Act Program. Approximately 33 percent of the expenditures through 1995 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.

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 June 30, 1996, the Department had sold $4.5 billion of revenue bonds. That amount includes $160 million of Water System Revenue Bonds, Series P, sold May 7, 1996. 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 $470 million of Water System Revenue Bond proceeds have been applied to the East Branch Enlargement project through June 30, 1996. Of this total amount, $401 million was used for construction expenditures and $69 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 June 30, 1996, $1.139 billion of proceeds from Water System Revenue Bonds, Series A through Series P, were applied to SWP projects other than the East Branch Enlargement. Of this total amount, $994 million was used to pay for construction expenditures and $145 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 $373 million for construction of SWP water

Table 15-7
Application of Revenue Bond Proceeds
(Millions of Dollars)

Bond Series (a	Application of Revenue Bond Proceeds						
		Other Capital Requirements					
	Construction Expenditures	Reimbursement of General Fund	Capitalized Interest	Capitalized Operating Costs	Bond Discount and Financing Costs (b	Subtotal	Total Principal Amount of Bonds
Oroville	218.0	2.6	19.9	1.5	3.0	27.0	245.0
Devil Canyon-Castaic	126.4	0.0	10.0	0.7	2.1	12.8	139.2
Pyramid Series A	74.0	0.0	19.2	1.0	1.6	21.8	95.8
Reid Gardner Series B	146.1	0.0	41.9	0.0	12.0	53.9	200.0
Reid Gardner Series C	91.1	0.0	17.9	7.9	8.1	33.9	125.0
Small Hydro-South Geysers Series D	49.6	0.0	19.9	0.0	5.5	25.4	75.0
Bottle Rock Series E	96.9	0.0	22.0	3.7	2.4	28.1	125.0
Alamo-South Geysers Series F	59.1	0.0	14.2	0.0	1.7	15.9	75.0
Reid Gardner Series G	1.6	0.0	0.0	0.0	237.9 (c	237.9	239.5
Power Facilities Series H	22.2	0.0	0.0	0.0	184.5 (d	184.5	206.7
East Branch Enlargement Series A	108.3	0.0	12.6	0.0	11.1	23.7	132.0
Water System Facilities Series B	97.4	0.0	0.0	0.0	2.6	2.6	100.0
Water System Facilities Series C	0.6	0.0	0.0	0.0	8.4 (e	8.4	9.0
Water System Facilities Series D	95.9	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	140.4	0.0	6.4	0	13.2	19.6	160.0
Subtotal	2,208.0	2.6	230.4	14.8	2,085.0	2,332.8	4,540.8
Future Water System Facilities Bonds	372.9	0.0	25.7	0.0	51.1	76.8	449.7
Future East Branch Enlargement Bonds	4.7	0.0	0.3	0.0	0.4	0.7	5.4
Grand Total	**2,585.6**	**2.6**	**256.4**	**14.8**	**2,136.5**	**2,410.3**	**4,995.9**

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 G Bonds.
h) Includes $26.3 million for debt service reserves and $20.5 million for discounts; remaining amount was used to refund portions of prior issues of PFRB and WSRB 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.

system facilities and $77 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 prior to 1997.

Line 28, Application of California Water Fund Monies, shows the amount of SWP costs financed under the Burns-Porter Act, which 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, 1995, 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 on-going 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.

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 15-2). Projected amounts for 1996 through 2010 include funds to finance expenditures for San Joaquin drainage facilities, as indicated in Line 12 of Table 15-1, 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 1996 through 2010. Data on annual revenues and expenditures are presented in Table 15-2. 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 obligation bond sales only. In 1969, after Oroville Revenue Bonds were issued, the contract was amended to expand the basis to include rates on all other securities sold and loans obtained thereafter for financing SWP facilities, including revenue bonds (see Bulletin 132-70, page 28).

However, not all proceeds from the sale of revenue bonds are melded into the calculation of the Project Interest Rate. Only those proceeds applied to construction costs (the only application of general obligation bonds permitted by law) and those consumed by the bond discount (a component of the total interest cost of a revenue bond issue) are included in the calculation (see Table 15-8).

Table 15-8
Effect of Revenue Bond Proceeds on Project Interest Rate
(Millions of Dollars)

Project	Revenue Bond Proceeds: Applied to Construction Costs	Less Portion of Proceeds Derived from Interest Earnings Prior to Delivery of Bonds	Plus Bond Discount and Financing Costs	Subtotal, Proceeds Included in Calculating Project Interest Rate	Principal Amount of Bonds	Percentage of Total Amount Included in Calculating Project Interest Rate
Devil Canyon-Castaic Project Revenue Bonds	125.3	1.5	1.4	125.2	139.2	90.0
Pyramid Project Revenue Bonds (Series A)	71.2	0.5	1.1	71.8	95.8	75.0
Alamo Project Bond Anticipation Note	16.8	0.1	0.3	17.0	24.4	70.0
Small Hydro Project I Revenue Bonds (Series D)	25.4	0.2	1.5	26.7	37.5	71.0
Alamo Project Revenue Bonds (Series F)	38.9	0.3	0.7	39.3	50.0	79.0
Power Facilities						
Revenue Bonds (Series H)						
Facility						
Pyramid Project	5.0	0.0	0.1	5.1	5.1	100.0
Alamo Project	1.7	0.0	0.0	1.7	1.7	100.0
Small Hydro Project I	25.2 (a	0.2	0.4	25.4	35.6	71.0
Water System Revenue Bonds (Series J)						
Facility						
Pyramid Project	–	–	75.9	75.9	94.5 (b	76.0
Alamo Project	–	–	45.6	45.6	57.1 (b	80.0
Small Hydro Project	–	–	27.5	27.5	38.8 (b	71.0
Water System Revenue Bonds (Series L)						
Facility						
Small Hydro Project	–	–	1.5	1.5	2.1 (b	71.0

a) Amount consists of 71 percent of proceeds deposited in escrow account ot refund portion of Series C 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.

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 15-9 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 1997 water charges billed July 1, 1996. However, information about significant differences between the sum of future charges included in Lines 2 through 7 of Table 15-2 and the substantiation of 1997 charges included in Appendix B are as follows:

- Future capital costs in Appendix B are based on the prevailing prices as of December 31, 1995. Those costs presented in the financial analysis include allowances for price escalation.
- Pre-1996 charges in Appendix B represent charges as they should have been according to currently known conditions. Pre-1996 charges included in Table 15-2 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 15-2 for 1996 and thereafter have been adjusted for any apparent overpayments or underpayments of pre-1996 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 P bonds. Charges in Table 15-2 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 P bonds. Surcharge values included in Table 15-2 apply to Series B through Series P bonds and to

Table 15-9
Actual Bond Sales and Project Interest Rates, by Date of Sale

Bond Sales	Date of Sale	Dollar-Years (a ($1000)	Interest Cost ($1000)	Percent Interest Cost (b (Percent)	Project Interest Rate (c (Percent)
$ 50,000,000 Bond Anticipation Notes	11/21/63	26,944	531	1.971	1.971
$100,000,000 Series A Water Bonds	2/18/64	3,402,000	119,750	3.520	3.508
$ 50,000,000 Series B Water Bonds	5/05/64	1,726,000	60,986	3.533	3.516
$100,000,000 Series C Water Bonds	10/07/64	3,452,000	123,764	3.585	3.544
$100,000,000 Series D Water Bonds	2/16/65	3,497,900	122,403	3.499	3.531
$100,000,000 Series E Water Bonds	11/23/65	3,497,900	130,029	3.717	3.573
$100,000,000 Series F Water Bonds	6/08/66	3,497,900	137,359	3.927	3.638
$100,000,000 Series G Water Bonds	11/22/66	3,497,900	143,788	4.111	3.711
$100,000,000 Series H Water Bonds	3/21/67	3,497,900	129,261	3.695	3.709
$100,000,000 Series J Water Bonds	7/18/67	3,497,900	143,199	4.094	3.754
$100,000,000 Series K Water Bonds	11/14/67	3,497,900	163,887	4.685	3.853
$150,000,000 Revenue Bonds, Oroville Division, Series A	4/03/68	5,228,700	270,289	5.169	
$100,000,000 Series L Water Bonds	7/11/68	3,497,900	166,918	4.772	3.941
$100,000,000 Series M Water Bonds	10/22/68	3,497,900	169,989	4.860	4.021
$ 94,995,000 Revenue Bonds, Oroville Division, Series B	4/01/69	3,423,460	195,902	5.722	
$ 46,761,000 Cumulative 1970 General Fund Borrowing, repaid 7/10/70	-	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	5/01/93	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	
$190,000,000 Series M Water System Revenue Bonds	12/01/93	3,911,846	194,981	4.984	
$ 1,400,000 Series Y Water Bonds	11/30/94	19,483	1,249	6.411	
$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	11/03/95	7,528,890	375,667	4.990	
$160,000,000 Series P Water System Revenue Bonds	5/01/96	3,553,823	204,524	5.755	
Total		**158,028,129**	**9,447,449**		
Portion allocated to Project Interest Rate		**63,808,312**	**2,948,070**	**4.620**	**4.620**

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, Power Revenue Bonds for Off-Aqueduct facilities, and Water System Revenue Bonds, which do not affect the Project Interest Rate.
d) These revenue bonds and revenue bond anticipation notes were sold at the following net interests costs. The amounts indicated (representing the sum of proceeds used for constructionand the bond discount) were used in the calculations of the Project Interest Rate.

Devil Canyon-Castaic Revenue Bonds:	5.446 percent	$ 126,893,000
Pyramid Hydroelectric Revenue Bonds:	7.680 percent	$ 75,586,000
Alamo Bond Anticipation Notes:	10.036 percent	$ 18,034,000
Small Hydro Project I, Series D Revenue Bonds:	10.275 percent	$ 28,012,000
Alamo Project, Series F Revenue Bonds:	8.525 percent	$ 40,114,000
Power Facilities, Series H Revenue Bonds:	7.926 percent	$ 42,340,000

assumed future issues required to finance any SWP construction.

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.

For off-aqueduct facilities, that amount is charged annually to contractors and collected through the minimum OMP&R component of the Transportation Charge. For the East Branch Enlargement facilities, the cover is collected through the capital component of the East Branch Enlargement Transportation Charge. For water system facilities, that amount is collected through the water bond surcharge. If not needed to meet annual bond service, the cover is credited to the contractors in the following year.

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 Agreement, 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 their 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 1995. The amounts in Line 10 are based on the assumption that the federal share will continue at 44.09 percent for calendar years 1996 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 1994-95, no funds were appropriated for enhancement of fish and wildlife and recreational purposes. No appropriations are indicated for 1996 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 the repayments for the $53.5 million of loans disbursed as of December 31, 1995. 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 15-1. 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 Edward Hyatt and Thermalito power plants before April 1, 1983, according to a power sale contract dated November 29, 1967. The 1952-1995 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 deposited in the California Water Revenue Fund-Systems Revenue Account are disbursed according to the following four priorities of use as specified in the Burns-Porter Act:

1. 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 15-2.

Line 21, Project Operations, Maintenance, and Power Costs, shows the OM&P portion of the historical and projected costs presented in Table 15-10 (see page 199).

Table 15-10 and Line 21 of Table 15-2 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 1998. Allowances for additional long-term price escalations in the future are not included in these estimates because changes in OM&P costs do not substantially affect the overall results of the financial analysis. (For the most part, changes in OM&P costs cause direct offsetting changes in operating revenues.)

Power costs make up the major item of annual operating expense for the SWP. Assumptions about future power sources and costs are discussed in Chapter 11, "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, 1995, $43.7 million had been spent for replacement costs; the balance of the replacement reserve as of that date was $63.6 million. Replacement reserve amounts are also included in Table 15-10.

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 1952-1995 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 15-1. In Table 15-2, 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 June 30, 1996, show the total principal and interest payments on bonds sold to date. Table 15-11 (see page 200) 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 May 7, 1996, were the Series P Water System Revenue Bonds. Proceeds from the Series P bonds were used to provide funds for construction, fund the debt service reserve account, and pay bond discount and interest costs.

Line 26 also includes over $0.3 million in interest payments to the General Fund for the temporary loan of $46.8 million in 1970. That loan was repaid by proceeds from the sale of Series N Water Bond Anticipation Notes.

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 15-1 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 15-1 for water system facilities. Assumptions about the service on these

Table 15-1
Capital Requirements and Financing, June 30,1996
(Thousands of dollars)

Line Number	Line Item	Calendar year 1952-1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Calendar year 2008	2009	2010	Total 1996-2010	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	0	0	2,202,316
2.	North Bay Aqueduct, Phase II	90,398	144	725	1,438	11	0	0	0	0	0	0	0	0	0	0	0	2,318	92,716
3.	Delta & Suisun Marsh Facilities	219,903	13,770	11,869	15,228	31,805	27,306	13,337	4,602	135	0	0	0	0	0	0	0	118,052	337,955
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	0	0	43,673
5.	Coastal Branch Aqueduct, Phase II	255,250	192,687	2,825	977	409	136	91	0	0	0	0	0	0	0	0	0	197,125	452,375
6.	West Branch Aqueduct	186,716	692	13,523	53	25	0	0	0	0	0	0	0	0	0	0	0	14,293	201,009
7.	East Branch Enlargement	428,092	6,777	1,321	7	0	0	0	0	0	0	0	0	0	0	0	0	8,105	436,197
8.	East Branch Improvements	127,593	22,159	6,497	4	0	0	0	0	0	0	0	0	0	0	0	0	28,660	156,253
9.	East Branch Extension	0	0	0	41,630	0	0	0	0	0	0	0	0	0	0	0	0	41,630	41,630
10.	Power Generation and Transmission Facilities	662,551	3,036	3,035	3,035	3,015	3,000	3,000	0	0	0	0	0	0	0	0	0	18,121	680,672
11.	Additional Conservation Facilities	122,025	7,579	7,910	12,866	16,782	19,528	7,281	7,281	6,585	3,209	3,209	3,209	3,209	3,209	3,209	3,209	108,275	230,300
12.	San Joaquin Drainage Facilities	44,354	2,635	2,674	2,754	2,837	2,922	2,966	2,966	2,966	2,966	2,966	2,966	2,966	2,966	2,966	2,966	43,482	87,836
13.	Other Costs	235,306	5,179	4,409	1,917	898	770	134	124	0	0	0	0	0	0	0	0	13,431	248,737
14.	**TOTAL PROJECT CONSTRUCTION EXPENDITURES**	**4,618,177**	**254,658**	**54,788**	**79,909**	**55,782**	**53,662**	**26,809**	**14,973**	**9,686**	**6,175**	**6,175**	**6,175**	**6,175**	**6,175**	**6,175**	**6,175**	**593,492**	**5,211,669**
15.	Davis-Grunsky Act Program Costs	127,543	2,457	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,457	130,000
16.	Special Capital Requirements Under Revenue Bond Financing	516,828	45,187	0	10,200	10,200	10,200	0	10,200	0	0	0	0	0	0	0	0	85,987	602,815
17.	**TOTAL CAPITAL REQUIREMENTS**	**5,262,548**	**302,302**	**54,788**	**90,109**	**65,982**	**63,862**	**26,809**	**25,173**	**9,686**	**6,175**	**6,175**	**6,175**	**6,175**	**6,175**	**6,175**	**6,175**	**681,936**	**5,944,484**
18.	Power Facilities Capital Requirements	1,223,921	7,789	3,035	3,035	3,015	3,000	3,000	0	0	0	0	0	0	0	0	0	22,874	1,246,795
19.	Water Facilities Capital Requirements	4,038,627	294,513	51,753	87,074	62,967	60,862	23,809	25,173	9,686	6,175	6,175	6,175	6,175	6,175	6,175	6,175	659,062	4,697,689
	FINANCING OF CAPITAL REQUIREMENTS																		
	Power Revenue Bond Proceeds																		
20.	Power Revenue Bonds through Series H	1,161,679	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,161,679
	Water Revenue Bond Proceeds																		
21.	East Branch Enlargement, Current Bonds	462,723	7,229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,229	469,952
22.	East Branch Enlargement, Future Bonds	0	5,392	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,392	5,392
23.	Water System Facilities, Current Bonds	985,961	152,771	0	0	0	0	0	0	0	0	0	0	0	0	0	0	152,771	1,138,732
24.	Water System Facilities, Future Bonds	0	149,748	0	75,000	75,000	75,000	0	75,000	0	0	0	0	0	0	0	0	449,748	449,748
25.	**SUBTOTAL, WATER REVENUE BONDS**	**1,448,684**	**315,140**	**0**	**75,000**	**75,000**	**75,000**	**0**	**75,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**615,140**	**2,063,824**
	Other Capital Financing																		
26.	Initial Project Facilities Bond Proceeds	1,480,442	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,480,442
27.	Davis-Grunsky Act Program Bond Proceeds	99,546	2,457	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,457	102,003
28.	Application of California Water Fund Monies (Tideland Oil Revenues)	508,089	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	508,089
29.	Interim Financing	17,455	-18,362	50,793	9,102	-15,018	-17,138	22,309	-54,327	5,186	0	0	0	0	0	0	0	-17,455	0
30.	Application of Capital Resources Revenues to Construction	498,021	432	1,321	7	0	0	0	0	0	1,675	1,675	1,675	1,675	1,675	1,675	1,675	13,485	511,506
31.	Revenue Transfers Applied	48,632	2,635	2,674	6,000	6,000	6,000	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	68,309	116,941
32.	**SUBTOTAL, OTHER CAPITAL FINANCING**	**2,652,185**	**-12,838**	**54,788**	**15,109**	**-9,018**	**-11,138**	**26,809**	**-49,827**	**9,686**	**6,175**	**6,175**	**6,175**	**6,175**	**6,175**	**6,175**	**6,175**	**66,796**	**2,718,981**
33.	**TOTAL FINANCING OF CAPITAL REQUIREMENTS**	**5,262,548**	**302,302**	**54,788**	**90,109**	**65,982**	**63,862**	**26,809**	**25,173**	**9,686**	**6,175**	**6,175**	**6,175**	**6,175**	**6,175**	**6,175**	**6,175**	**681,936**	**5,944,484**

Table 15-2
State Water Project Revenues and Expenditures, June 30,1996
(Thousands of dollars)

Line Number	Line Item	Calendar year 1952-1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Calendar year 1996-2010	1952-2010
	Project Revenues																		
1.	Capital resources revenues	793,858	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	793,858
	Water Contractor Payments																		
2.	Transportation capital	2,185,837	113,900	130,340	135,780	136,015	136,106	138,547	138,646	138,586	138,522	138,468	137,320	138,854	138,887	138,937	138,986	2,037,894	4,223,731
3.	Transportation minimum	2,583,218	199,876	227,763	228,658	228,002	228,531	228,400	230,325	217,802	217,470	216,154	216,376	216,219	235,277	235,029	234,206	3,360,088	5,943,306
4.	Transportation variable	993,106	82,822	73,332	88,378	36,985	71,886	126,103	132,171	135,153	138,949	121,144	122,797	125,405	127,740	130,090	132,740	1,645,695	2,638,801
5.	Delta Water Charge	1,054,193	85,389	93,036	93,822	94,336	98,441	99,925	100,989	104,102	104,891	105,350	105,584	106,032	106,267	106,504	106,745	1,511,413	2,565,606
6.	East Branch Enlargement payments	148,524	36,929	39,911	40,162	40,145	41,051	41,034	40,758	40,726	39,288	39,273	39,273	39,302	39,344	39,399	39,473	596,068	744,592
7.	Water Revenue Bond Surcharge	91,644	34,973	40,919	45,573	46,773	47,283	46,922	47,866	47,529	48,248	47,979	47,748	47,591	47,520	47,644	47,755	692,323	783,967
8.	*Subtotal water contractor payments*	*7,056,522*	*553,889*	*605,301*	*632,373*	*582,256*	*623,298*	*680,931*	*690,755*	*683,898*	*687,368*	*668,368*	*669,098*	*673,403*	*695,035*	*697,603*	*699,905*	*9,843,481*	*16,900,003*
9.	Revenue bond cover adjustments	0	(28,356)	(31,204)	(38,226)	(37,448)	(37,384)	(37,304)	(37,237)	(37,074)	(34,630)	(34,486)	(34,195)	(34,160)	(34,132)	(37,881)	(37,909)	(531,626)	(531,626)
10.	Rate management adjustments	0	0	(14,000)	(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)	(501,000)	(501,000)
	Other Revenues																		
11.	Federal payments for project operating costs	118,308	19,745	20,256	10,048	9,277	9,277	9,277	9,277	9,277	9,277	9,277	9,277	9,277	9,277	9,277	9,277	161,373	279,681
12.	Appropriations for operating costs allocated to recreation	16,657	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,657
13.	Davis-Grunsky loan repayments	33,384	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	33,000	66,384
14.	Revenue Bond Proceeds	427,321	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	427,321
15.	Interest Earnings on Operating Revenue	412,856	6,658	8,811	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	119,469	532,325
16.	Oroville-Thermalito payments	249,279	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	249,279
17.	Miscellaneous revenues	127,222	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	127,222
18.	*Subtotal, other revenues*	*1,385,027*	*28,603*	*31,267*	*20,248*	*19,477*	*19,477*	*19,477*	*19,477*	*19,477*	*19,477*	*19,477*	*19,477*	*19,477*	*19,477*	*19,477*	*19,477*	*313,842*	*1,698,869*
19.	**Total operating revenues**	**8,441,549**	**554,136**	**591,364**	**597,395**	**532,285**	**572,391**	**622,604**	**632,495**	**625,801**	**631,715**	**612,859**	**613,880**	**618,220**	**639,880**	**638,699**	**640,973**	**9,124,697**	**17,566,246**
20.	**Total operating revenues and Capital Resources Revenues**	**9,235,407**	**554,136**	**591,364**	**597,395**	**532,285**	**572,391**	**622,604**	**632,495**	**625,801**	**631,715**	**612,859**	**613,880**	**618,220**	**639,880**	**638,699**	**640,973**	**9,124,697**	**18,360,104**
	Project Expenses																		
21.	Project operations, maintenance,and power costs	3,499,854	277,610	296,116	305,228	248,724	286,411	340,849	349,289	351,853	356,339	339,321	341,597	344,338	346,650	349,038	351,330	4,884,693	8,384,547
22.	Deposits to Replacement Reserves	107,287	7,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,458	114,745
23.	Deposits to special reserves	528,686	(11,204)	(6,156)	19,093	6,256	4,312	2,186	(21)	(4,743)	(4,673)	(4,594)	(4,856)	(4,023)	515	(3,218)	(2,681)	(13,807)	514,879
24.	Capital resources expenditures	498,021	432	1,321	7	0	0	0	0	0	1,675	1,675	1,675	1,675	1,675	1,675	1,675	13,485	511,506
	Payments of Debt Service																		
25.	Principal repayments on bonds sold through June 30, 1996 (current bonds)	968,009	69,270	80,837	83,010	86,590	90,545	94,930	98,930	94,622	99,515	102,980	107,460	112,375	132,960	140,241	147,195	1,541,460	2,509,469
26.	Interest on bonds sold through June 30, 1996 (current bonds)	3,351,584	182,926	178,668	174,160	169,645	164,879	159,898	154,283	148,731	143,521	138,137	132,667	126,993	121,165	113,999	106,436	2,216,108	5,567,692
27.	Future East Branch enlargement bond principal repayments	0	0	0	70	73	76	79	83	87	91	95	99	105	112	118	126	1,214	1,214
28.	Future East Branch enlargement bond interest payments	0	0	0	288	285	282	279	274	271	267	263	258	252	246	239	232	3,436	3,436
29.	Future Water Bond principal repayments	0	0	0	1,515	2,247	3,024	3,171	4,127	5,168	5,449	5,750	6,066	7,190	7,628	8,087	8,574	67,996	67,996
30.	Future Water Bond interest payments	0	0	0	8,024	12,465	16,862	16,712	21,030	25,312	25,031	24,732	24,414	24,815	24,429	24,020	23,586	271,432	271,432
31.	**Total Principal**	**968,009**	**69,270**	**80,837**	**84,595**	**88,910**	**93,645**	**98,180**	**103,140**	**99,877**	**105,055**	**108,825**	**113,625**	**119,670**	**140,700**	**148,446**	**155,895**	**1,610,670**	**2,578,679**
32.	**Total Interest**	**3,351,584**	**182,926**	**178,668**	**182,472**	**182,395**	**182,023**	**176,889**	**175,587**	**174,314**	**168,819**	**163,132**	**157,339**	**152,060**	**145,840**	**138,258**	**130,254**	**2,490,976**	**5,842,560**
33.	*Subtotal Debt Service*	*4,319,593*	*252,196*	*259,505*	*267,067*	*271,305*	*275,668*	*275,069*	*278,727*	*274,191*	*273,874*	*271,957*	*270,964*	*271,730*	*286,540*	*286,704*	*286,149*	*4,101,646*	*8,421,239*
34.	**Total Operating Expenses and Debt Service**	**8,953,441**	**526,492**	**550,786**	**591,395**	**526,285**	**566,391**	**618,104**	**627,995**	**621,301**	**627,215**	**608,359**	**609,380**	**613,720**	**635,380**	**634,199**	**636,473**	**8,993,475**	**17,946,916**
35.	Net System Revenues	281,966	27,644	40,578	6,000	6,000	6,000	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	131,222	413,188
	Application of Net System Revenues																		
36.	California Water Fund Repayment	233,334	25,009	37,904	0	0	0	0	0	0	0	0	0	0	0	0	0	62,913	296,247
37.	Revenues used for capital expenditures	48,632	2,635	2,674	6,000	6,000	6,000	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	68,309	116,941

Table 15-10
Operations, Maintenance, Power, and Replacement Costs, by Facility, Composition, and Purpose
(Thousands of dollars)

Feature	Calendar year 1962-1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Calendar year 2011-2035	Total
Project Facility																		
Feather River facilities	106,288	4,013	5,724	5,407	3,203	3,239	3,263	3,269	3,271	3,274	3,258	3,260	3,262	3,264	3,266	3,268	71,905	232,434
North Bay Aqueduct	14,108	2,287	2,409	2,396	2,195	2,251	2,357	2,377	2,390	2,405	2,367	2,370	2,375	2,380	2,386	2,392	60,366	109,811
Delta facilities	173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	173
Suisun Marsh	7,695	2,165	2,470	2,540	2,062	2,062	2,051	2,051	2,051	2,051	2,051	2,051	2,051	2,051	2,051	2,051	45,933	85,437
South Bay Aqueduct	120,103	8,550	9,722	9,592	8,387	8,941	9,401	9,486	9,529	9,582	9,327	9,351	9,387	9,419	9,452	9,490	240,951	500,670
California Aqueduct																		
Delta to Edmonston	1,411,935	122,026	120,081	127,006	105,736	127,397	158,822	161,428	162,688	164,432	156,493	157,459	158,737	159,332	160,511	162,078	4,150,111	7,766,272
Edmonston to Perris	1,173,441	82,156	90,432	89,349	61,017	83,112	121,705	126,429	127,430	129,187	119,489	120,493	121,743	123,423	124,280	125,006	3,290,355	6,109,047
West Branch	(20,877)	6,713	3,483	(626)	(2,936)	(10,249)	(26,383)	(25,663)	(25,659)	(25,567)	(26,225)	(26,121)	(25,983)	(26,013)	(25,731)	(25,812)	(635,920)	(919,569)
Coastal Branch	49,865	4,715	7,409	7,487	6,682	7,141	7,568	7,644	7,681	7,728	7,503	7,524	7,556	7,584	7,613	7,647	194,447	353,794
Off-aqueduct power generating facilities	613,956	38,423	40,557	49,021	50,271	50,271	50,271	50,271	50,271	50,271	50,271	50,271	50,271	50,271	50,271	50,271	132,364	1,477,573
Recreation, planning and CVP negotiations	0	0	0	0	0	0	557	557	557	557	557	557	557	557	557	557	13,925	19,495
Water quality monitoring	128,090	16,803	16,469	15,549	14,456	14,456	13,308	13,372	13,437	14,073	14,073	14,073	14,073	14,073	14,073	14,073	216,069	560,520
Davis-Grunsky Act Program	4,383	291	295	304	309	309	309	309	309	309	309	309	309	309	309	309	7,714	16,695
Subtotal	3,609,160	288,142	299,051	308,025	251,382	288,930	343,229	351,530	353,955	358,302	339,473	341,597	344,338	346,650	349,038	351,330	7,788,220	16,312,352
Payments to/credits from PG&E under Comprehensive Agreement	(2,019)	(3,074)	(2,935)	(2,797)	(2,658)	(2,519)	(2,380)	(2,241)	(2,102)	(1,963)	(152)	0	0	0	0	0	0	(24,840)
Total OMP&R Costs	**3,607,141**	**285,068**	**296,116**	**305,228**	**248,724**	**286,411**	**340,849**	**349,289**	**351,853**	**356,339**	**339,321**	**341,597**	**344,338**	**346,650**	**349,038**	**351,330**	**7,788,220**	**16,287,512**
Composition																		
Salaries and expenses of headquarters personnel	656,398	82,779	85,655	87,796	89,071	88,941	87,931	87,905	87,879	87,853	87,831	87,809	87,788	87,768	87,749	87,153	2,185,237	4,153,543
Salaries and expenses of field personnel	1,203,660	86,960	86,265	81,494	73,790	73,790	74,165	74,229	74,294	74,930	74,930	74,931	74,930	74,930	74,930	74,930	1,724,103	4,077,261
Pumping power																		
Used by pumping plants	1,988,301	124,568	143,711	156,299	111,581	167,016	245,268	254,492	256,196	260,035	241,171	243,278	246,126	248,324	250,806	252,902	6,608,024	11,798,098
Produced by generation plants	(817,175)	(50,879)	(57,387)	(66,848)	(73,607)	(91,364)	(114,682)	(115,643)	(114,961)	(115,063)	(115,006)	(114,968)	(115,053)	(114,919)	(114,994)	(114,202)	(2,868,48)	(5,175,159)
Payments to/credits from PG&E under Comprehensive Agreement	(2,019)	(3,074)	(2,935)	(2,797)	(2,658)	(2,519)	(2,380)	(2,241)	(2,102)	(1,963)	(152)	0	0	0	0	0	0	(24,840)
Off-Aqueduct power generating facilities requirement	613,956	38,423	40,557	49,021	50,271	50,271	50,271	50,271	50,271	50,271	50,271	50,271	50,271	50,271	50,271	50,271	132,364	1,477,573
Oroville-Thermalito insurance premiums	8,963	250	250	263	276	276	276	276	276	276	276	276	276	276	276	276	6,900	19,938
Less portion of costs incurred during construction	(152,230)	(1,416)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(153,646)
Subtotal	3,499,854	277,611	296,116	305,228	248,724	286,411	340,849	349,289	351,853	356,339	339,321	341,597	344,338	346,650	349,038	351,330	7,788,220	16,172,768
Deposits to replacement reserves	107,287	7,457	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	114,744
Total OMP&R Costs	**3,607,141**	**285,068**	**296,116**	**305,228**	**248,724**	**286,411**	**340,849**	**349,289**	**351,853**	**356,339**	**339,321**	**341,597**	**344,338**	**346,650**	**349,038**	**351,330**	**7,788,220**	**16,287,512**
Project Purpose																		
Water supply and power generation	3,450,666	270,031	280,061	289,516	233,934	271,282	325,634	333,842	336,269	340,520	321,778	323,882	326,611	328,919	331,299	333,596	7,363,413	15,461,253
Payments to/credits from PG&E under Comprehensive Agreement	(2,019)	(3,074)	(2,935)	(2,797)	(2,658)	(2,519)	(2,380)	(2,241)	(2,102)	(1,963)	(152)	0	0	0	0	0	0	(24,840)
Recreation and fish and wildlife enhancement	53,600	7,643	8,029	7,762	7,462	7,657	7,601	7,694	7,691	7,787	7,702	7,722	7,733	7,737	7,745	7,740	174,905	344,210
Flood control	2,044	237	232	230	233	238	241	241	242	242	240	240	241	241	241	241	6,058	11,682
Miscellaneous purposes																		
Federal share, San Luis and Delta facilities	96,542	9,745	10,256	10,048	9,277	9,277	9,277	9,277	9,277	9,277	9,277	9,277	9,277	9,277	9,277	9,277	231,930	469,845
Other (Davis-Grunsky, drainage, City of Los Angeles)	6,308	486	473	469	476	476	476	476	476	476	476	476	476	476	476	476	11,914	25,362
Total OMP&R Costs	**3,607,141**	**285,068**	**296,116**	**305,228**	**248,724**	**286,411**	**340,849**	**349,289**	**351,853**	**356,339**	**339,321**	**341,597**	**344,338**	**346,650**	**349,038**	**351,330**	**7,788,220**	**16,287,512**

Table 15-11
Annual Debt Service on Bonds Sold through June 30, 1996
(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		Reid Gardner Project Power Facilities Revenue Bonds, Series B, C, G, and H; Water System Revenue Bonds, Series F and J		South Geysers Project Power Facilities Revenue Bonds, Series D, F, and H; Water System Revenue Bonds, Series D, E, J, and L		Small Hydro Project Power Facilities Revenue Bonds, Series D and H; Water System Revenue Bonds, Series J and L		Bottle Rock Project Power Facilities Revenue Bonds, Series E; Water System Revenue Bonds Series D, E, and J		Alamo Project Power Facilities Revenue Bonds, Series F and H; Water System Revenue Bonds, Series J		East Branch Enlargement Water System Revenue Bonds, Series A, D, E, H, I, J, K, L, M, N, O, and P		Water System Facilities Water System Revenue Bonds, Series B, C, D, E, G, H, I, J, K, L, M, N, O, and P		Coastal Extension Water System Revenue Bonds, Series P		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
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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	3,727	0	6,017	0	2,449	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	3,727	0	10,315	0	4,198	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	3,727	0	10,315	0	4,198	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	0	3,537	1,240	10,315	0	4,263	0	4,021	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	0	3,348	1,305	10,253	265	4,329	0	9,651	0	4,952	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	345	3,348	1,390	10,849	280	4,314	995	9,876	710	11,037	0	0	44,855	157,882
1989	28,145	57,825	33,705	5,513	1,275	7,284	875	7,378	7,820	27,557	709	5,646	365	3,328	1,566	11,592	295	4,298	1,078	10,115	1,148	14,368	0	0	76,981	154,904
1990	29,385	56,473	10,385	4,301	1,355	7,198	930	7,305	6,675	29,781	761	5,596	405	3,304	1,678	11,491	320	4,279	1,134	10,050	1,227	19,554	0	0	54,255	159,332
1991	30,365	55,070	12,055	3,922	1,435	7,107	980	7,227	7,170	29,302	817	5,540	430	3,276	1,792	11,376	335	4,257	1,197	16,856	2,129	27,568	0	0	58,705	171,501
1992	31,745	54,233	14,135	2,985	1,520	7,010	2,395	5,307	8,950	27,188	1,934	4,136	960	2,553	4,575	7,942	1,260	3,086	2,583	22,241	5,108	28,410	0	0	75,165	165,091
1993	33,390	52,707	13,755	2,237	1,610	6,907	1,525	5,687	8,820	26,953	901	4,280	445	2,759	3,264	8,386	755	3,300	3,039	22,836	4,576	31,080	0	0	72,080	167,132
1994	35,075	51,274	35,225	934	1,705	6,799	1,575	5,633	78,457	26,273	1,588	4,072	930	2,735	3,374	8,270	780	3,274	4,567	20,753	5,915	38,224	0	0	169,191	168,241
1995	36,210	49,701	0	0	1,810	6,684	1,630	5,569	5,420	19,231	1,695	4,005	1,000	2,681	3,521	8,133	805	3,242	4,979	21,879	8,069	41,922	0	0	65,139	163,047
1996	37,520	48,072	0	0	1,920	6,561	1,685	5,496	5,775	18,869	1,808	3,930	800	2,498	3,682	7,974	845	3,207	4,776	21,962	10,459	63,207	0	1,150	69,270	182,926
1997	37,215	46,412	0	0	2,035	6,432	1,760	5,396	11,775	18,478	1,945	3,848	840	2,457	3,861	7,802	895	3,160	6,189	23,210	13,972	59,501	350	1,972	80,837	178,668
1998	37,295	44,785	0	0	2,155	6,295	1,835	5,332	12,570	17,662	2,065	3,759	900	2,414	4,030	7,613	930	3,124	6,454	22,857	14,402	58,380	374	1,939	83,010	174,160
1999	38,220	43,180	0	0	2,285	6,160	1,915	5,238	13,455	16,782	2,216	3,658	970	2,366	4,240	7,412	985	3,077	6,762	22,498	15,141	57,369	401	1,905	86,590	169,645
2000	39,510	41,524	0	0	2,420	6,040	2,000	5,137	14,380	15,828	2,095	3,547	910	2,312	4,470	7,191	1,035	3,025	7,871	22,114	15,425	56,293	429	1,868	90,545	164,879
2001	40,600	39,806	0	0	2,565	5,912	2,100	5,027	15,385	14,798	2,205	3,432	970	2,257	4,720	6,950	1,090	2,969	8,276	21,695	16,560	55,224	459	1,828	94,930	159,898
2002	41,740	38,041	0	0	2,720	5,773	2,200	4,910	16,480	13,685	2,325	3,307	1,005	2,197	4,990	6,691	1,155	2,908	8,708	21,043	17,121	53,943	486	1,785	98,930	154,283
2003	43,590	36,219	0	0	2,885	5,626	2,310	4,786	8,175	12,481	2,475	3,173	980	2,134	5,285	6,411	1,220	2,843	9,163	20,562	18,024	52,755	515	1,741	94,622	148,731
2004	45,730	34,305	0	0	3,055	5,470	2,430	4,652	8,755	11,869	2,620	3,029	1,080	2,073	5,610	6,110	1,295	2,773	8,526	20,048	19,876	51,499	538	1,693	99,515	143,521
2005	47,020	32,306	0	0	3,240	5,305	2,540	4,509	8,485	11,214	2,750	2,873	1,135	2,005	5,950	5,784	1,375	2,697	8,991	19,571	20,931	50,230	563	1,643	102,980	138,137
2006	48,275	30,248	0	0	3,435	5,130	2,675	4,359	9,015	10,696	2,920	2,711	1,180	1,938	6,325	5,433	1,450	2,616	9,501	19,062	22,094	48,883	590	1,591	107,460	132,667
2007	49,765	28,126	0	0	3,640	4,945	2,825	4,199	9,530	10,138	3,100	2,536	1,250	1,867	6,730	5,054	1,540	2,529	10,046	18,540	23,330	47,523	619	1,536	112,375	126,993
2008	51,755	25,938	0	0	3,860	4,749	2,980	4,029	25,100	9,549	3,300	2,350	1,265	1,792	7,160	4,650	1,640	2,437	10,626	17,993	24,623	46,174	651	1,504	132,960	121,165
2009	54,095	23,656	0	0	4,090	4,540	3,150	3,847	26,785	7,802	3,490	2,147	1,280	1,714	7,635	4,212	1,745	2,336	11,250	17,414	26,036	44,863	685	1,468	140,241	113,999
2010	55,785	21,280	0	0	4,335	4,319	3,325	3,654	28,575	5,962	3,720	1,934	1,270	1,636	8,135	3,744	1,865	2,229	11,924	16,798	27,540	43,449	721	1,431	147,195	106,436
2011	57,275	18,828	0	0	4,595	4,085	3,505	3,450	30,495	4,000	3,960	1,706	1,270	1,558	8,675	3,246	1,980	2,115	12,638	16,134	29,122	41,939	760	1,390	154,275	98,451
2012	58,615	16,277	0	0	4,875	3,837	3,720	3,205	32,615	2,068	4,235	1,429	1,285	1,469	9,335	2,638	2,135	1,977	13,398	15,425	30,865	40,281	802	1,346	161,880	89,952
2013	60,455	13,733	0	0	5,165	3,574	3,950	2,944	0	0	4,550	1,132	1,850	1,379	10,040	1,985	2,295	1,827	14,198	14,673	32,705	38,515	847	1,298	136,055	81,060
2014	57,985	11,296	0	0	5,475	3,303	4,160	2,703	0	0	4,830	854	1,920	1,266	10,720	1,370	2,450	1,687	15,054	13,867	34,622	36,692	894	1,248	138,110	74,286
2015	53,775	8,886	0	0	5,805	3,015	4,375	2,453	0	0	5,075	564	1,990	1,151	740	727	2,605	1,540	15,957	13,013	36,639	34,769	944	1,194	127,905	67,312
2016	46,215	6,669	0	0	6,150	2,710	4,600	2,190	0	0	2,180	259	2,165	1,031	790	682	2,775	1,383	16,913	12,113	38,770	32,747	997	1,140	121,555	60,924
2017	38,145	4,651	0	0	6,520	2,388	4,835	1,914	0	0	170	128	2,275	902	840	635	2,955	1,217	17,630	11,164	41,034	30,630	1,053	1,083	115,457	54,712
2018	25,435	3,009	0	0	6,910	2,045	5,080	1,624	0	0	180	118	2,395	765	890	585	3,155	1,039	19,023	10,149	43,405	28,353	1,112	1,014	107,585	48,701
2019	16,975	1,804	0	0	7,325	1,682	5,335	1,319	0	0	190	107	2,505	621	950	531	3,360	850	20,175	9,073	45,951	25,945	1,174	942	103,940	42,874
2020	17,405	956	0	0	7,765	1,298	5,610	999	0	0	205	96	2,630	471	1,010	474	3,585	649	21,403	7,932	48,617	23,418	1,240	872	109,470	37,165
2021	8,595	320	0	0	8,230	890	5,890	663	0	0	215	84	2,750	313	1,070	414	3,825	433	22,681	6,759	51,435	20,768	1,309	797	106,000	31,441
2022	1,885	61	0	0	8,725	458	6,160	339	0	0	230	72	2,945	162	1,130	355	4,055	223	24,041	5,520	54,377	18,039	1,382	725	104,930	25,954
2023	85	8	0	0	0	0	0	0	0	0	240	59	0	0	1,200	293	0	0	19,462	4,200	61,713	15,153	1,460	653	84,160	20,366
2024	35	4	0	0	0	0	0	0	0	0	576	46	0	0	2,855	227	0	0	21,190	3,137	55,687	11,508	1,542	576	81,885	15,498
2025	35	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,958	1,902	43,014	8267	1,628	495	61,635	10,665
2026	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,713	937	36,603	6,016	1,719	410	45,035	7,363
2027	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,547	575	33,918	4,158	1,815	319	40,280	5,052
2028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,549	335	24,144	2,498	1,917	224	29,610	3,057
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,752	184	25,519	1,315	2,024	123	31,295	1,622
Total	1,582,400	2,387,246	244,995	246,522	139,165	283,872	106,510	205,123	423,817	604,254	74,855	118,657	46,695	84,798	156,773	232,447	59,335	106,357	437,917	600,737	1,082,556	1,427,419	32,000	40,903	4,387,018	6,338,335

a) Principal and interest schedule adjusted to reflect early redemption of bonds

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 a total of $70 million toward the repayment of the California Water Fund. The legislature subsequently appropriated all these funds to the State's General Fund. Legislation enacted in 1989 provided for the orderly, scheduled reimbursement of the remaining balance owed to the California Water Fund over a period of 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, 1995, reimbursements to the California Water Fund totaled $461 million. Of this total approximately $233 million was direct repayments and $228 million was offsets for recreation and fish and wildlife enhancement expenditures to date.

Repayment of the California Water Fund is expected to be completed in 1997.

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 15-12 represent both unescalated and escalated costs of water according to service areas for years 1997 and 2000. The unit rates in Table 15-12 include costs of existing and future SWP facilities accounted for in Tables 15-1 and Table 15-7. The unit charges are based on the assumption that in 1997 and 2000, the SWP will be able to deliver entire amounts of water requested by contractors. The unit water charges included in Table 15-12 are listed both as unescalated 1995 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 1996 through 2010. The escalation rates for future power sources vary, depending on the source of energy.

Information for this chapter was provided by the State Water Project Analysis Office in conjunction with the Division of Fiscal Services.

Table 15-12
Estimated Unit Water Charges for 1997 and 2000, by Service Area
(Dollars per Acre-Foot)

Service Area and Charge	1997		2000	
	Unescalated	*Escalated*	*Unescalated*	*Escalated*
Feather River Area				
Capital; Operations, Maintenance, and Replacement (OM&R)	66	66	64	65
North Bay Area				
Capital; OM&R	139	139	146	149
Power	15	15	12	13
Total	**154**	**154**	**158**	**162**
South Bay Area				
Capital; OM&R	77	77	76	80
Power	38	38	33	34
Total	**115**	**115**	**109**	**114**
Coastal Area				
Capital; OM&R	623	623	640	646
Power	90	90	84	83
Total	**713**	**713**	**724**	**729**
San Joaquin Area				
Capital; OM&R	53	53	53	54
Power	17	17	15	16
Total	**70**	**70**	**68**	**70**
Southern California Area				
Capital; OM&R	266	266	157	163
Power	100	100	85	88
Total	**366**	**366**	**242**	**251**

Chapter 16

SWP Information and Water Education

Children listen intently during a Water Awareness Month activity at the new Edmonston Visitor Area

Significant Events

- The Department created a new video to help the CALFED Bay-Delta Program educate the public on its mission to develop long-term solutions to Delta water problems.
- The Department constructed a new visitor area at the Edmonston Pumping Plant, featuring new exhibits, artwork, and displays. Edmonston's new visitor area was unveiled at a grand opening held on May 9, 1996.
- The Department hosted a special luncheon for tour directors and travel writers on May 2, 1996, to help market Vista del Lago as a tour destination.
- To help children learn about California water issues, the Department unveiled a dramatic Children's Exhibit at the Conservation Fair on the State Capitol west lawn. The exhibit featured a simulation of the California Aqueduct, a map showing the water cycle, and a giant hamburger demonstrating the amount of water needed for food production.
- The DWR California Water Page attracted a growing number of computer users in 1995 and 1996. The water page features descriptions of the State Water Project, snow water content in the Sierra Nevada, storage at key reservoirs, river flow projections, and a menu of current and recent news announcements.
- The SWP attracted thousands of visitors, including many from foreign lands. Many water experts, researchers, VIPs, and government officials visited the Delta, SWP facilities, the Department's headquarters, and the Project Operations Center at the new Joint Operations Center (shared by the SWP and Central Valley Project).

The Department of Water Resources' Office of Water Education conducts public information and education programs to help inform the news media and educate the public about the operations and value of the State Water Project. These programs employ a variety of public outreach methods, including news media relations, publications, web sites on the Internet, videos, SWP visitor centers and tours, exhibits, brochures, and special events.

State Water Project Information and Education Programs

Media Outreach

To keep the news media informed of SWP developments, the Department publicizes significant events affecting SWP operations and water deliveries.

During fiscal year 1995-1996, the Department issued 26 news releases and numerous media advisories and faxes, assisted in developing news releases with other State agencies, and helped the CALFED Bay-Delta Program with its public outreach effort.

The Department serviced hundreds of inquiries from the State and national news media, including wire services, network television, regional and local news media, water industry, and specialty publications.

Early in the water year, monthly snow surveys and water advisories kept water writers current on water supply conditions and prospects. Record low precipitation figures in fall 1995 led the news media to speculate that a new drought might be at hand.

Heavy precipitation in January, February, and March, however, dramatically reversed the water supply situation. In March, the Department issued a news release announcing that the SWP would deliver all the water requested by its 29 water supply contractors in 1996.

Department news contacts during fiscal year 1995-1996 covered a wide range of topics including rain and snowfall figures, water supplies and reservoir levels, water allocations and deliveries, environmental actions, Delta developments, fishery impacts, fish monitoring, the Monterey Agreement and the lawsuit challenging it, dam safety and flood control, and operations of the SWP.

In addition to media calls, the Department's information representatives handled hundreds of inquiries from students, business people, writers, academics and researchers, and foreign and domestic government agencies. For example, the newly-established University of Gaza obtained helpful information on the Department's water conservation programs for its curriculum in water management. Many inquiries were received and answered via e-mail.

Internet Web Site

The Department's internet information site completed its first full year of operation since going on-line in January 1995. Usage more than doubled in fiscal year 1995-1996.

Although government agencies were primary users, computer users in commerce, education, and the military, as well as users from the United States, Europe, Asia, and Australia, also showed significant interest.

The Department currently has 13 major home pages on-line for public access. The Office of Water Education reviews all home pages before they go on-line. Many of these first became operational during 1995-1996:

- The Division of Local Assistance provided information about their programs and districts (http://www.water.ca.gov/cgi-bin/dla/home.pl);
- The Division of Planning added pages for Delta Modeling (http://wwwdelmod.water.ca.gov) and Hydrology and Operations (http://wwwhydro.water.ca.gov);

- The Central District created a page for Groundwater Level Data (http://well.water.ca.gov);
- The Environmental Services Office, in cooperation with other State and federal agencies, developed and hosts the Interagency Ecological Program home page (http://www.iep.ca.gov);
- The Division of Operations and Maintenance added two new pages to its Operations Control Office page—Delta Environmental Compliance (http://wwwoco.water.ca.gov/cmplmon/CMhome.html) and Water Quality Program (http://wwwomhq.water.ca.gov/wq/wqhomepage.html); and
- The Office of Water Education's Graphic Services Branch added a page about its services. (http://wwwdwr.water.ca.gov/owegs). OWE also initiated a non-public page, titled DWR Employees' News Update.

At the end of fiscal year 1995-1996, the DWR California Water Page was redesigned to increase content and to streamline the site for easier user access and navigation.

Publications

Coastal Branch Progress. Since construction on the Coastal Branch started, the Department has mailed regular four-page updates on right-of-way and construction progress to property owners, local government and community leaders, and others affected by the project. In the summer of 1995, the *Coastal Branch Progress* newsletter reported on close cooperation between the Department and the Central Coast Water Authority. The publication informed readers of cost control, construction schedules, and protection of Native American cultural resources in the construction zone.

DWR People. This bimonthly publication is an internal newsletter for Department employees. Stories feature employees, their accomplishments, news items, awards, and retirements. This year's issues reported a major aqueduct repair project, radial gate inspections, and Coastal Aqueduct construction.

DWR News. DWR News is published twice a year in the spring and fall and provides a comprehensive, in-depth review of the Department's major programs and activities. Topics covered in 1995-96:

- real-time fish monitoring in the Delta;
- archaeological finds along the Coastal Branch;
- creation of vernal pools and duck brood ponds at Oroville;
- the Monterey Agreement;
- Arroyo Pasajero flooding problems;
- fish ladder construction at Parrott Phelan Dam in Butte County;
- the destructive nature of the zebra mussel; and
- use of acoustical barriers to keep migrating fish on course in the Delta.

Brochures. The Department published an array of brochures describing SWP facilities. During fiscal year 1995-1996, OWE revised and reprinted 10 brochures: *Devil Canyon Powerplant, Castaic Lake, South Bay Aqueduct and Lake Del Valle, San Luis Joint Use Complex, Feather River Fish Hatchery, Cali-fornia's State Water Project, Edmonston Pumping Plant, Fishing Along the SWP, Pyramid Lake,* and the *Oroville-Thermalito Complex.*

The Department also prepared and issued a new brochure, *SWP Recreational Facilities*, as a marketing tool to interest more people in recreation at SWP lakes and reservoirs. The Department received more than 500 phone requests for this brochure after it was released and distributed by mail and at special events. To assure that publications are attuned to visitor interests, OWE conducts twice-yearly surveys on brochure needs at the visitor centers.

Silverwood Lake Publications. During 1995-1996, the Department provided publications to keep Silverwood Lake visitors advised of construction progress on the new intake tunnel project and on continuing recreational opportunities at the lake during construction. OWE developed a promotional flyer on recreational opportunities at Silverwood Lake despite the first drawdown. The flyer contained a subscription form for a free newsletter. In early spring 1996, the first newsletter was released to approximately 600 subscribers. In addition, a flyer promoting the free 800 number was produced for distribution to sporting goods retail stores in the area.

SWP Calendar. A 1996 calendar was produced for distribution to visitors of SWP facilities, among others. The calendar featured photographs of recreational activities at SWP lakes and reservoirs.

Video Projects

The video unit produced *The Delta Dilemma* to support the CALFED process. This 8-minute video presented issues encountered in the search for a long-term Delta solution. The video also introduced the CALFED process to the general public. A second CALFED video is planned for fiscal year 1996-1997.

When a radial arm on a spillway gate at Folsom Dam broke on July 17, 1995, staff provided video coverage for analytical, documentary, and presentation purposes. A short segment was produced to document Director Kennedy's presentation at the Western States Water Council meeting in November 1995.

An 18-minute video, *Construction Update Number 7,* was completed in June 1996. The video features the Coastal Branch Phase II, Mojave Siphon Powerplant, and the San Bernardino Tunnel Intake Tower reconstruction projects. The Coastal Branch footage shows innovative construction activities, including drilling beneath San Juan Creek, laying pipe beneath the Salinas River, and tunneling under US Highway 101. This video helps to graphically represent SWP construction activities to water contractors and Department employees.

Visitor Center Program

Since 1992, OWE has managed the visitor facilities public education program. The facilities include the visitor centers at Oroville, San Luis, and Pyramid Lake, and visitor areas at Edmonston Pumping Plant and Delta Field Division. The visitor centers at Oroville, San Luis, and Pyramid Lake are open daily, except for some holidays. Tours at the Edmonston Pumping Plant and Delta Field Division are by appointment only. Vista del Lago, overlooking Pyramid Lake, is the largest visitor center in the SWP system and the largest water education center in the United States. It attracts more than 12,000 visitors a month. Activities under this program include providing assistance on water education outreach, producing and renovating exhibits, producing educational and promotional materials, and conducting educational outreach programs. This effort is closely coordinated with O&M field divisions.

Table 16-1
Visitor-Days Recorded in 1995, by Location

Location	*Visitor-Days*
Oroville Field Division	170,411
Delta Field Division	1,266
San Luis Field Division	149,652
San Joaquin Field Division	6,814
Southern Field Division	152,374
Total	**480,517**

Program Highlights in Fiscal Year 1995-1996

Edmonston Visitor Area

A grand opening was held May 9 for the new visitor area at Edmonston Pumping Plant. This project involved two phases: (1) design and con-struction of the new area, achieved through efforts of the Architectural Office and the San Joaquin Field Division; and (2) design and fabrication of new exhibits, a project achieved by OWE and the San Joaquin Field Division, with input from the Kern County Water Agency and Metropolitan Water District of Southern California.

The new visitor area features a 22' x 20' mural showing the "big lift" of water pumped by Edmonston over the Tehachapi Mountains, a photo wall showing construction of the plant, a major photo montage display showing multiple uses of SWP water and SWC service areas, and a display of historic and modern Kern County before and after the SWP. The facility offers a more visitor-friendly atmosphere, with ample seating and more flexibility for other uses. Opening day events included a visit by 120 elementary school children from Kern County, a mass ribbon-cutting, free fishing for kids, and a tour of the plant. This event drew coverage by the Bakersfield Californian and Bakersfield television stations.

Vista del Lago Media Day

On May 2, 1996, the Department hosted a luncheon and guided tour to familiarize travel directors, senior tour coordinators, and travel writers with Vista del Lago. The event publicized the facil-

ity as a tour destination. The day featured visits by school children and a tour by active seniors. This event generated positive coverage in the Bakersfield Californian, the Santa Clarita Valley edition of the Los Angeles Daily News, Bakersfield television station KERO, and Los Angeles television station KCAL. *Westways* magazine, published by the Automobile Club of Southern California, sent a writer to the event.

Vista del Lago Public Survey

During the 1995-1996 fiscal year, a consultant conducted a survey of Vista del Lago visitors to learn why they came to the water education center and what they learned about water. The survey of 332 visitors showed that the typical visitor is a white male, 26-45 years of age, and a California resident with a college degree. On average, visitors spent more than 25 minutes at the center. Almost 85 percent of survey respondents viewed displays or took written materials, with 65 percent of those polled stating that they learned something new about water.

Respondents most commonly listed that new information learned included: how and why water is transported to various regions of California (38 percent); the amounts of water needed for farms and cities (24 percent); and the sources of water used in the Los Angeles area (16 percent).

Water Safety Education

The Department operates an active water safety education program to promote safe use of recreational facilities along the SWP. The program goals are to save lives, reduce the liability of the Department and the State Water Contractors, and provide an opportunity for the Department's field division staff to interact with nearby communities and enhance rapport with the public.

Since 1991, the Department has conducted an ongoing, multimedia SWP safety-education program. It targets people recreating at SWP facilities, especially youths, through a combination of media outreach, in-person safety presentations at schools and community organizations, and Department staff contact with facility users.

Since fiscal year 1991-1992, more than 622 presentations have been made featuring the Department's safety mascots "Albert and Einstein" to help children learn safe water practices.

A highlight of water safety efforts this year was Oroville Field Division's hosting of the May 22 "media safety day" at Lake Oroville. This event featured water rescue demonstrations using helicopters and rafts, with participation by local law enforcement and rescue agencies and the U.S. Coast Guard.

SWP Visits and Tours

The SWP continued to attract hundreds of interested people and tour groups in 1995-1996. Numerous government officials and water experts from other nations traveled to California to view the largest state-run water project in the United States.

Since 1988, OWE has been assigned to coordinate the Visitor Program. In a typical year, the Department coordinates special tours for about 700 dignitaries, foreign officials, and water experts.

Visits vary widely in scale, duration, and focus, from half-day field trips for grade school students to in-depth presentations for water experts. In 1995-1996, the Department welcomed visitors from 16 nations. The Department seeks to match visitors with guides and experts appropriate to their level of interest. Tours include guided visits to the Flood Operations Center and the Project Operations Center, and many facilities in the field divisions and along the SWP.

Typical visitor briefing topics include water resources management; SWP operations, con-struction and repair; agricultural irrigation and drainage; water quality; water banking and transfers; dam safety; Delta operations; Flood Operations Center functions; and Project Operations Center activities.

Displays and Exhibits

Portable Exhibits

OWE participated in many events with exhibits targeting industry professionals, children, and outdoor enthusiasts. OWE unveiled a new SWP exhibit at the

July 1995 Waterpower Conference and Expo in San Francisco. In February 1996, OWE introduced a new exhibit at the Sports Expo RV and Boat Show. This exhibit highlighted the recreational opportunities along the SWP. OWE helped develop a special display showcasing a new Butte Creek fish ladder to help salmon and steelhead migrate. Department engineers played a key role in this project.

OWE staged and staffed exhibits at several well-attended events in Sacramento, including Earth Day, Conservation Day, Scientists Day, Festival de la Familia, and the Apricot Festival in Patterson. Thousands of people attended these events and viewed the water-related exhibits.

Stationary Exhibits

Romero. Phase I of updating exhibits has been completed at the Romero Overlook Visitor Center at San Luis Reservoir. This includes new displays on SWP lakes and reservoirs, pumping and power plants, the California Aqueduct, State Water Contractors, and agricultural and urban water conservation.

Brown/Warne. In June, a new historic exhibit was installed in a glass display case located in the Resources Building to honor the accomplishments of former Governor Edmund G. (Pat) Brown and former Department Director William E. Warne, who served under Brown. Both greatly contributed to building the State Water Project.

School Education Program

Water education in the schools is a high priority for the Department. OWE and the Department's field divisions and districts promote the teaching of water-related concepts to educators and local agencies. This program provides students and teachers with a statewide perspective on water issues. The Department pursues this goal by developing and promoting high quality materials that are provided at no charge to schools, educators, and water districts.

During 1995-96, OWE staff:

- created a Children's Exhibit consisting of a "California Water Works" entrance archway. The exhibit has eight hands-on components including a simulation of the California Aqueduct, a relief map demonstrating the water cycle, and a giant hamburger demonstrating the amount of water needed for food production.
- staffed the Children's Exhibit at two events in Sacramento, the Conservation Fair at the State Capitol, and the Children's Festival on the downtown mall. District and field division staff used components of the exhibit at various events for Water Awareness Month.
- produced education materials for the Vista del Lago Visitor Center—Vista del Lago Teacher's Guide, Student Passport, Portfolio Folder for teachers (including black line masters of lessons and evaluation postcard), and field trip tote bag for teachers.
- hosted and participated in the Department's Water Education Committee, including a field trip to the Vista del Lago Visitor Center for water educators throughout California. The committee consists of approximately 75 education specialists from California's local water agencies.

Water Awareness Month Activities

For the ninth consecutive year, the Department conducted an active Water Awareness Month campaign, stressing the theme "Use Water Wisely—It's a Way of Life." Governor Pete Wilson issued a proclamation for the 1996 Water Awareness Month campaign that informed the public about water supply, quality, distribution, and management.

Since 1987, more than 250 water agencies have joined in celebrating May as Water Awareness Month. The campaign promotes enhanced public understanding of the value of water and the vital role of California water agencies in managing the State's water supply. Through the field divisions, the Department provides community outreach materials and services to support this effort, stressing the importance of water and benefits of the SWP to user communities.

In 1996, the Department conducted a series of special events celebrating Water Awareness Month. They included:

- May 2 travel tour at Vista del Lago Visitor Center at Pyramid Lake;
- May 9 grand opening of the new visitor area at Edmonston Pumping Plant;
- May 11 free tours of Hyatt Powerplant beneath Oroville Dam;
- May 18 fishing derby at O'Neill Forebay near San Luis Reservoir;
- May 17 Walk for Wellness for active adults at Oroville Dam; and
- OWE water safety display at the Patterson Apricot Festival.

During Water Awareness Month, the Department issued several regional news releases and a statewide news release to help increase public awareness of this observance. The Director encouraged public visits during May to SWP recreational facilities and visitor centers.

Summary

Media relations and public outreach continue to be the focus of the Department's Information and Education programs. During fiscal year 1996-1997, a high priority will be given to efforts to help educate the public on the Department's role in Delta issues, including progress on CALFED solutions, the Interim South Delta Program to improve South Delta flows and provide more pumping flexibility, and the Department's environmental efforts in the Delta.

Completion of the Coastal Branch and its operational start-up will be a major information focus. Special emphasis will be placed on publicizing the recreational value of SWP lakes and reservoirs and promoting the visitor centers as destinations for visitors and group tours.

Press outreach, publications, videos, exhibits, and school/community outreach projects help inform California residents and visitors of the SWP's responsibilities and its programs on water delivery, management, planning, and safety. These efforts help the Department fulfill its mission to educate the public about water's vital role in their lives and the continuing need to protect, manage, and conserve the State's water resources.

Information in this chapter was contributed by the Office of Water Education.

Appendix B

Data and Computations Used to Determine 1997 Water Charges

Contents

Page

Types of Water Charges 217
Composition and Timing of Water Charges 219
Bases for Allocating Reimbursable Costs Among Contractors 221
Capital and Minimum OMP&R Costs 221
Variable OMP&R Costs 223
Water Conveyance 223
Bases for Reimbursable Costs 224
Capital Costs 225
Annual Operating Costs 226
Transportation and Devil Canyon-Castaic Contract Costs 226
Conservation Capital and Operating Costs 227
Project Water Charges 227
Transportation Charges 227
Delta Water Charges 231
Water System Revenue Bond Surcharge 231
Total Water Charges 231
Equivalent Total Water Charges 231
Equivalent Water Costs by Reach 234
East Branch Enlargement Facility Charges 234
Short-Term Agreements 234

Figures

B-1. Relationships of Data Used to Substantiate Statements of Charges 216
B-2. Relationships of Data Used to Substantiate East Branch Enlargement Charges 218
B-3. Composition of Delta Water Charge and Transportation Charge 220
B-4. Repayment Reaches and Descriptions 222
B-5. Cost Allocation Factors 225
B-6. Criteria for Amortizing Capital Costs of Transportation Facilities 228
B-7. Extra Peaking Charges for Additional Power, by Pumping Plant 232
B-8. Extra Peaking Charges for Additional Power, by Contractor 233
B-9. Determination of Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities Among Participating Contractors 235

Tables

B-1. Factors for Distributing Reach Capital Costs Among Contractors 238
B-2. Factors for Distributing Reach Minimum OMP&R Costs Among Contractors 240
B-3. Power Costs and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant 242
B-4. Annual Entitlements to Project Water 244
B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor 248
B-5B. Annual Water Quantities Delivered to Each Contractor 260

Tables (continued)

B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities 264
B-7. Reconciliation of Capital Costs Allocated to Water Supply and Power Generation 273
B-8. State Water Project Capital Costs of Requested Delivery Structures 274
B-9. Capital Costs of Requested Excess Peaking Capacity. 275
B-10. Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge 277
B-11. Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge. 285
B-12. Variable OMP&R Costs to Be Reimbursed through Variable OMP&R Component of Transportation Charge. 293
B-13. Capital and Operating Costs of Project Conservation Facilities to Be Reimbursed through Delta Water Charge 296
B-14. Capital Costs of Transportation Facilities Allocated to Each Contractor 297
B-15. Capital Cost Component of Transportation Charge for Each Contractor 301
B-16A. Minimum OMP&R Component of Transportation Charge for Each Contractor 305
B-16B. Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities 309
B-17. Unit Variable OMP&R Component of Transportation Charge. 313
B-18. Variable OMP&R Component of Transportation Charge for Each Contractor 317
B-19. Total Transportation Charge for Each Contractor. 321
B-20A. Calculation of Delta Water Rates 325
B-20B. Delta Water Rates by Facility 326
B-21. Total Delta Water Charge for Each Contractor. 327
B-22. Water System Revenue Bond Surcharge for Each Contractor 331
B-23. Total Transportation and Delta Water Charge for Each Contractor 335
B-24. Equivalent Unit Charge for Water Supply for Each Contractor 339
B-25. Equivalent Unit Transportation Costs of Water Delivered from or through Each Aqueduct Reach. 340
B-26. Capital Costs of Each Aqueduct Reach to Be Reimbursed through the Capital Cost Component of the East Branch Enlargement Transportation Charge 341
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. 343
B-28. Capital Costs of East Branch Enlargement Transportation Facilities Allocated to Each Contractor 345
B-29. Capital Cost Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor 346
B-30. Minimum OMP&R Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor. 346
B-31. Total East Branch Enlargement Facilities Transportation Charge for Each Contractor 348

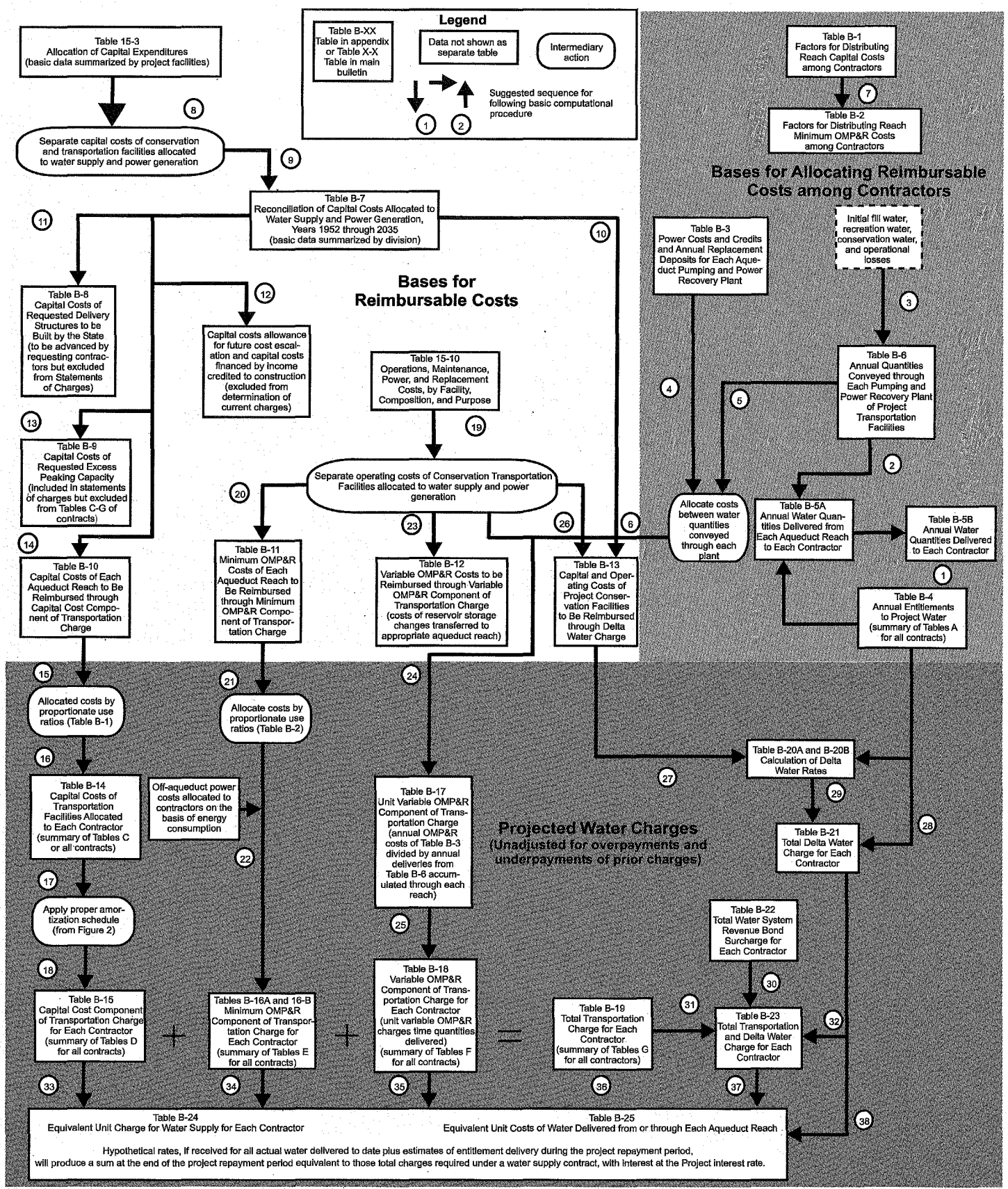


Figure B-1. Relationships of Data Used to Substantiate Statements of Charges

Appendix B
Data and Computations
Used to
Determine 1997 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 1997. The information is based on established data about the SWP, both known and projected, as of June 30, 1996.

The computational procedures and interrelationships between tabulations in this appendix are outlined in Figures B-1 and 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

- Antelope Dam and Lake;
- Oroville Dam and Lake Oroville;
- Oroville power facilities;
- Delta facilities;
- A portion of the Governor Edmund G. Brown California Aqueduct from the Delta to Dos Amigos Pumping Plant; and
- 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; and
- 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 that the contractors are entitled to receive according to their contracts. The unit charge, if applied to each acre-foot of all such entitlements for the remainder of the Project repayment period, is calculated to result in repayment of all outstanding reimbursable costs of the Project Conservation Facilities, with appropriate interest, by the end of the repayment period (2035).

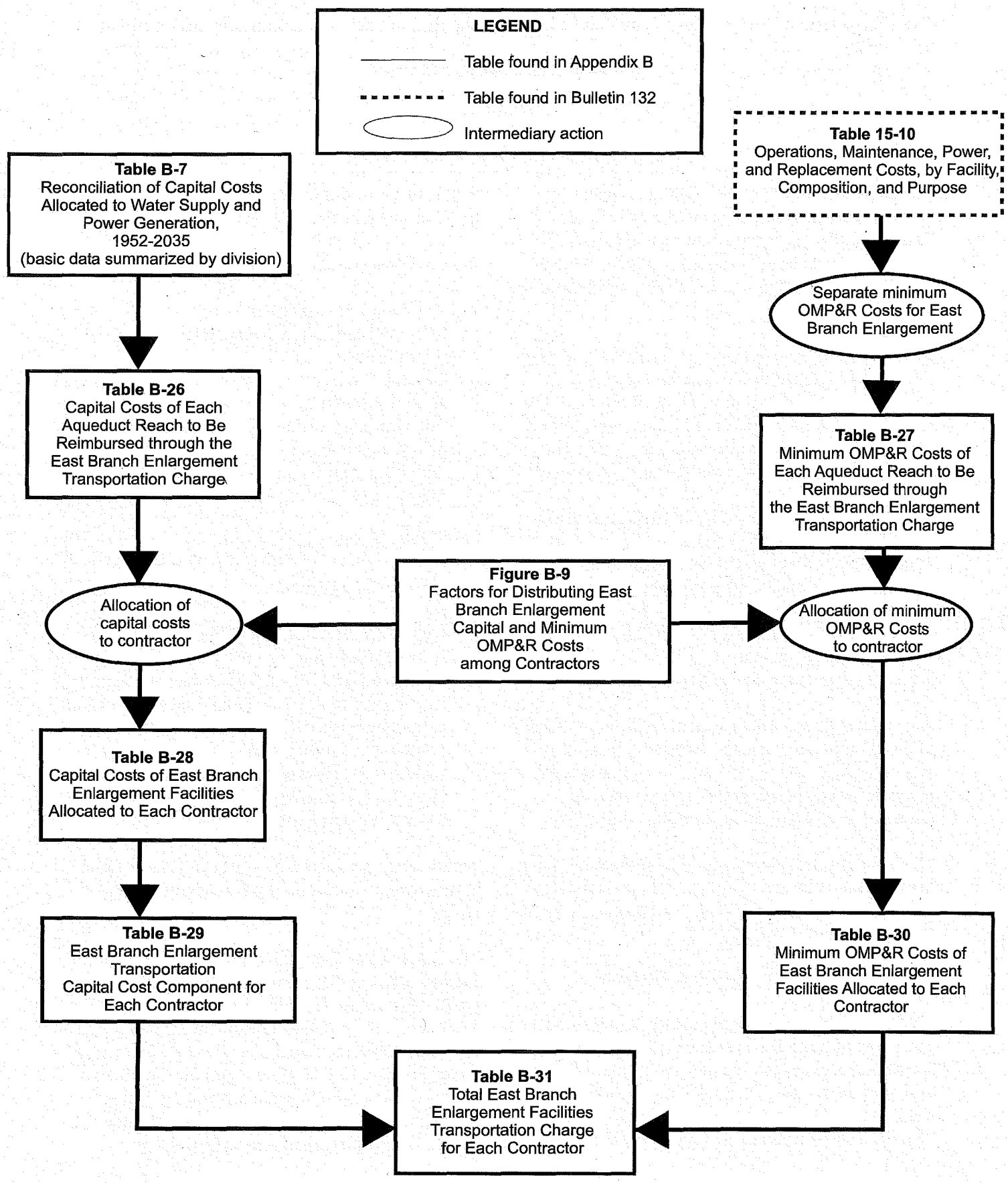


Figure B-2. Relationships of Data Used to Substantiate East Branch Enlargement Charges

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 1997.

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 1995 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 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;

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

Figure B-3. Composition of Delta Water Charge and Transportation Charge

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.

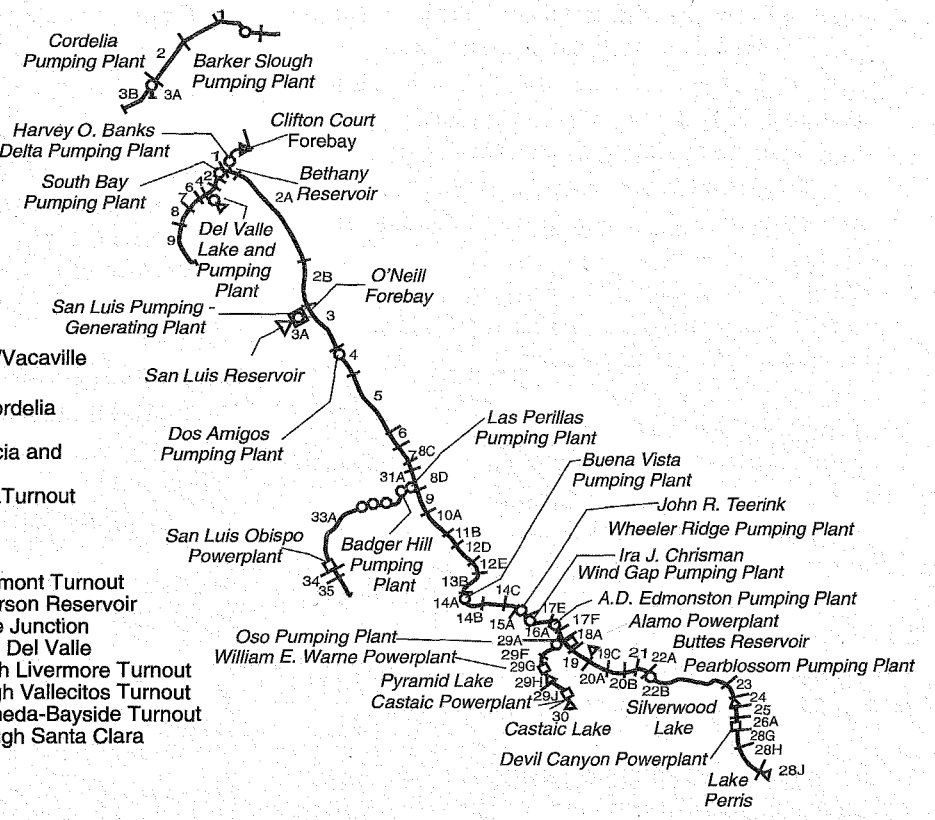
Allocations of reimbursable capital costs and minimum OMP&R costs of each reach are based on the proportionate maximum use of that reach by respective contractors under planned conditions of full development.

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 reported in Table B-1and B-2 of Bulletin 132-91.

Table B-1 presents the reach ratios currently applicable to reimbursable capital costs.

Table B-2 presents corresponding ratios for reimbursable minimum OMP&R costs. 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.



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 San Luis Obispo Powerplant
34 San Luis Obispo Powerplant to Arroyo Grande
35 Arroyo Grande through Santa Maria Terminus

Figure B-4. Repayment Reaches and Descriptions

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
- Annual payments to sinking fund reserves to finance periodic replacement of major plant machinery components having economic lives shorter than the Project repayment period. Sinking fund payments for 1962 through 1979 were based on a schedule determined in 1970. Sinking fund payments for 1980 through 1996 are based on revised replacement schedules. Those schedules were updated in 1986 and 1991. The Department discontinued the sinking fund payments for replacements in 1997 and is reviewing the issue of replacement costs and charges.

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.

In 1994, an interruptible water program was established. 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 1996 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 preconsolidation water used during construction.
- *Deliveries-Recreation.* Water delivered to down-aqueduct recreation developments or used for fish and wildlife mitigation or enhancement.
- *Operational Losses.* Water lost through evaporation and seepage from all down-aqueduct reaches.
- *Reservoir Storage Changes.* Water placed in down-aqueduct reservoir storage after initial filling of the reservoirs, including projected net annual storage accretions (positive values) and withdrawals (negative values) for all down-aqueduct reservoirs of the Project Transportation Facilities.

Those variable OMP&R costs (Table B-12) that are allocable to storage accretions are assigned to the minimum OMP&R costs of the respective reservoirs. With one exception, "Reservoir Storage Changes" also includes SWP water placed into Southern California ground water 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). The exception is Banks Pumping Plant, where ground water 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 non-Project 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. Figure B-1 shows a diagram of the cost derivation process in the upper-left quadrant.

Figure B-5
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.

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 Figure B-5. 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, 1995; 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 con-

tractor'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 MWDSC's contract, 809 cfs of excess capacity was originally constructed in reaches of the West Branch at MWDSC's request. That capacity was reclassified as basic capacity of SWP Transportation Facilities under Amendment 7. MWDSC paid $16.4 million as a prepayment of the capital cost component of the Transportation Charge in lieu of advancing funds for the original requested capacity.

Amendment 5 to MWDSC's contract requires that additional costs for modifications to the Santa Ana Valley Pipeline (required for enlargement of Lake Perris) will be allocated to MWDSC and returned to the State through payments of the Transportation Charge. The additional costs to be repaid through MWDSC's capital cost component for the aqueduct reach from Devil Canyon Powerplant to Barton Road total about $6.7 million (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 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 1997 and 1998.

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. The unit cost is equal to the variable OMP&R unit rate for the year the water is conveyed into storage. In years when storage in aqueduct reservoirs is decreased for the purpose of making deliveries, a credit is applied to the minimum OMP&R costs of the reservoir from which the storage is released. This credit is equal to the number of acre-feet of storage reduction times the variable OMP&R unit rate for the year storage is released; and
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 MWDSC's Amendment 7, are included as negative capital costs in Table B-14 and Table C of MWDSC's Statement of Charges for 1997. 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.

Figure B-6
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, Butte County, San Gabriel Valley Municipal Water District, and San Gorgonio Pass Water Agency, payments for Delta Water Charge only.
d) Payment deferred for 1963 and added to 1964 payment with accrued interest.
e) For Dudley Ridge Water District, Empire West Side Irrigation District, Kern County Water Agency (agricultural use), Oak Flat Water District, and Tulare Lake Basin Water Conservation District, according to Article 45 of the contracts for supply of agricultural water, capital costs of transportation facilities allocated to agricultural water supply are amortized by using an equivalent unit rate per acre-foot applied to the annual entitlements (Table B-4) through the project repayment period.
f) For San Luis Obispo Flood Control and Water Conservation District and Santa Barbara County Flood Control and Water Conservation District, all principal and interest payments for costs of the Coastal Stub were deferred until 1976.

Table B-15 summarizes capital cost components of the Transportation Charge for each contractor for each year of the Project repayment period. The capital cost components shown in Table B-15 will recover the costs shown in Table B-14 by 2035, with interest at the Project Interest Rate of 4.620 percent per annum and based on the amortization schedules included in Figure B-6.

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, with the remaining reach costs allocated by application of the proportionate-use ratios shown in the following table. The Department is currently reviewing its option to purchase Units No. 6 at Las Parillas and Badger Hill pumping plants to provide pumping capacity for deliveries to Coastal Area contractors scheduled to begin in December 1996.

Year	Charges	Year	Charges
1969	$46,510	1983	$89,947
1970	46,302	1984	106,720
1971	140,072	1985	158,854
1972	95,016	1986	136,616
1973	72,452	1987	125,674
1974	100,688	1988	130,921
1975	127,456	1989	127,869
1976	138,500	1990	136,680
1977	120,749	1991	137,603
1978	157,638	1992	184,361
1979	121,207	1993	215,114
1980	150,715	1994	352,544
1981	74,749	1995	273,897
1982	82,819	1996	317,265
		Total	**$3,968,938**

Summary of 1995 Off-Aqueduct Power Facility Charges and Credits

Item	*1995 Charges*
Reid Gardner Powerplant	$59,887,809
Bottle Rock Powerplant	$12,561,315
South Geysers Powerplant	$5,700,455
Subtotal	*$78,149,579*
Item	*1995 Credits*
Power sales	$3,637,751
Miscellaneous water	
Alameda County Zone-7	$18,314
Westlands Water District	$100,630
Westlands Water District	$88,135
Subtotal	*$3,844,830*
Grand Total	**$74,304,749**

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.

Year	Total Annual Cost	25% Bond Service
1996	$88,021,540	$10,319,630
1997	98,293,545	11,547,289
1998	106,742,112	11,544,308
1999	108,072,028	11,560,301
2000	107,758,647	11,497,625
2001	107,730,798	11,492,056
2002	100,031,806	9,960,309
2003	88,210,415	7,580,863
2004	90,067,941	9,445,744
2005	96,590,742	9,264,045
2006	96,646,003	9,275,096
2007	96,630,241	9,271,944
2008	115,405,491	13,026,994
2009	115,358,654	13,017,627
2010	115,358,037	13,017,503
2011	115,371,622	13,020,220
2012	115,670,123	13,079,921
2013	52,026,885	4,426,708
2014	23,181,490	4,443,298
2015	9,846,490	1,776,298
2016	4,889,115	977,823
2017	2,216,365	443,273
2018	2,215,615	443,123
2019	2,222,865	444,573
2020	2,231,115	446,223
2021	2,227,490	445,498
2022	2,232,896	446,579
2023	2,239,397	447,880
2024	4,629,222	925,845

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.

The following table summarizes Off-Aqueduct Power Facility charges and credits related to deliveries for 1995.

The following table shows projected charges for Off-Aqueduct Power Facilities and an amount equal to 25 percent of annual bond service for 1996 and each year thereafter.

Pumping Plant	*kWh per acre-foot (a*	
	At Plant	*Cumulative from Delta*
Barker Slough	223	223
Cordelia-Benicia	434	657
Cordelia-Vallejo	178	401
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	706	1,417
Bluestone	706	2,123
Polonio Pass	706	2,829

a) Includes Transmission Losses

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 for annual entitlement. An additional adjustment is made the following year based on actual entitlement water deliveries and actual costs for the year.

The energy required to pump each contractor's entitlement water is calculated using the kilowatt-hour per acre-foot factors shown in the table below for the pumping plants upstream from the delivery turnouts. The amounts include transmission losses.

Table B-17 presents a summary of actual and projected total variable OMP&R costs for each acre-foot of water conveyed through each aqueduct pumping plant and power plant for each year of the Project repayment period. Those data are derived according to the following procedure specified in Article 26(a) of the Standard Provisions for calculating the variable OMP&R component of the Transportation Charge:

- An annual charge per acre-foot of projected water deliveries to all contractors served from or through each reach is determined so the projected variable OMP&R costs to be incurred for each reach will be returned to the State.
- The total annual variable OMP&R component for any contractor for a given reach is obtained by multiplying the unit charge associated with that reach by the quantity of water actually delivered from or through the reach to the contractor.

The data summarized in Table B-17 are derived by dividing the costs shown in Table B-3 by the quantities of water shown in Table B-6. However, certain costs included in Table B-3 for extra peaking service, which would otherwise constitute variable OMP&R costs, are assigned directly to contractors requesting this type of service (see Bulletin 132-71, page 21, and Water Service Contractors Council Memo No. 593, July 10, 1970). Those costs are excluded from the unit charges shown in Table B-17. Peaking charges based on additional capacity ceased in 1983. Since 1984, costs are based on market energy rates. The amounts of extra peaking charges for additional power costs are shown in Figures B-7 and B-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 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 1997 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 4.620 percent based on Conservation Facility costs shown in Table B-13. That Delta Water Rate is used to compute projected Delta Water Charges shown in Table B-21.

Table B-20B shows each component of the 1997 Delta Water Rate from Table B-20A.

Table B-21 summarizes the annual Delta Water Charge for each contractor. The projected charges shown 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 P. 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 found 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; 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.

Year	Cordelia Napa	Cordelia Solano	Barker Slough	South Bay	Banks	Dos Amigos	Las Perillas and Badger Hill	Buena Vista	Teerink-Wheeler Ridge	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	33,110	10,566	0	195,883
1994	0	537	644	287	18,655	8,647	2,934	1,760	578	1,251	4,138	679	241	40,351
1995	0	0	0	568	22,452	10,371	2,269	5,338	6,166	13,250	45,663	14,337	0	120,414
Total	**3,253**	**1,568**	**2,455**	**10,562**	**366,551**	**324,303**	**75,732**	**40,097**	**27,824**	**52,051**	**155,293**	**25,582**	**241**	**1,085,512**

Figure B-7. Extra Peaking Charges for Additional Power, by Pumping Plant (in Dollars)

Year	Napa	Solano	Alameda Zone 7	ACWD	SCV WD	Dudley Ridge	Empire West Side	Kern County	County of Kings	Oak Flat	Tulare	AVEK	Castaic Lake	Coachella Valley	Desert Water Agency	LCID	Palmdale	SGVM WD	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	23,675	39,003	0	4,385	0	195,883
1994	0	1,181	394	0	0	0	396	25,071	851	0	0	0	7,977	1,667	2,733	81	0	0	40,351
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
Total	**4,532**	**2,743**	**8,346**	**2,590**	**3,523**	**27,415**	**6,004**	**622,414**	**8,877**	**1,326**	**79,423**	**123,044**	**21,911**	**25,342**	**131,878**	**4,875**	**10,847**	**422**	**1,085,512**

ACWD = Alameda County Water Agency
AVEK = Antelope Valley East Kern Water Agency
LCID = Littlerock Creek Irrigation District
SGVMWD = San Gabriel Valley Municipal Water District

Figure B-8. Extra Peaking Charges for Additional Power, by Contractor (in Dollars)

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 found in Table B-24 account for the rate of water demand buildup and cost allocation factors of the individual contractors; however, the unit costs included in Table B-25 reflect the effect of melding the respective buildups and allocation criteria of all contractors whose entitlements are conveyed through a given reach. Table B-25 also includes surplus water prior to May 1, 1973.

East Branch Enlargement Facility Charges

Table B-26 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 Figure B-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 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 two short-term agreements which affect the contractors' charges.

- A 5-year variable OMP&R agreement provides that for the period from 1994 through 1998 the Department will revise the assumptions used in

Reach Number	Description
18A	Junction, West Branch, California Aqueduct, through Alamo Powerplant
19	Alamo Powerplant to Fairmont
20A	Fairmont through 70th Street West
20B	70th Street West to Palmdale
21	Palmdale to Littlerock Creek
22A	Littlerock Creek to Pearblossom Pumping Plant
22B	Pearblossom Pumping Plant to West Fork Mojave River
23B	West Fork Mojave River to Silverwood Lake (excluding Mojave Siphon Powerplant facilities)
23C	Mojave Siphon Powerplant facilities
24	Cedar Springs Dam and Silverwood Lake
25	Silverwood Lake to South Portal, San Bernardino Tunnel
26A	South Portal, San Bernardino Tunnel through Devil Canyon Powerplant
26B	Devil Canyon Powerplant Bypass

Share of Enlargement Capacity (cfs)

Reach Number	Antelope Valley-East Kern Water Agency	Coachella Valley Water District	Desert Water Agency	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	Metropolitan Water District of Southern California	Total
18A		151	13	136	6		1200	1506
19		151	13	136	6		1200	1506
20A	35	151	13	136	6		1200	1541
20B	35	151	13	136	6		1200	1541
21	35	151	13	136			1200	1535
22A	35	151	13	136			1200	1535
22B		151	13	136			1200	1500
23B		184	67	212			1200	1663
23C		184	67				1200	1451
24		190	78				1200	1468
25		193	83			63	1200	1539
26A		193	83			63	1200	1539
26B							300	300

Factors for Distributing Capital and Minimum OMP&R Costs of Each 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

Figure B-9. Determination of Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities Among Participating Contractors

determining the projected variable OMP&R unit rates to reflect reduced water deliveries.

- A Municipal Water Quality Investigations agreement for the period 1994 through 1997 allows the Department to bill costs of this program to the participating M&I contractors under the Transportation minimum OMP&R component.

Tables B-1 through B-31 follow

TABLE B-1

Factors for Distributing Reach Capital Costs Among Contractors

Reach No.	Reach Description	North Bay Area: Napa County FC&WCD	North Bay Area: Solano County Water Agency	South Bay Area: Alameda County FC&WCD, Zone 7	South Bay Area: Alameda County Water District	South Bay Area: Santa Clara Valley Water District	South Bay Area: Future Contractor	Total
	NORTH BAY AQUEDUCT							
1	Barker Slough thru Fairfield/Vacaville Turnout	0.29667896	0.70332104					1.00000000
2	Fairfield/Vacaville Turnout to Cordelia Forebay	0.38414552	0.61585448					1.00000000
3A	Cordelia Forebay thru Benicia and Vallejo Turnouts		1.00000000					1.00000000
3B	Cordelia Forebay thru Napa Turnout Reservoir	1.00000000						1.00000000
	SOUTH BAY AQUEDUCT							
1	Bethany Reservoir thru Altamont Turnout			0.22599612	0.20663021	0.49237700	0.07499667	1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.22599658	0.20663059	0.49237783	0.07499500	1.00000000
4	Patterson Reservoir to Del Valle Junction			0.19504795	0.21450017	0.51113249	0.07931939	1.00000000
5	Del Valle Junction thru Lake Del Valle			0.14436367	0.12972254	0.33715573	0.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.14599918	0.21144710	0.50574745	0.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				0.25176680	0.60218448	0.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.27934645	0.72065355	1.00000000	
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
	CALIFORNIA AQUEDUCT							
1	Delta thru Bethany Reservoir			0.00954737	0.00872917	0.02080118	0.00342507	N/A

Reach No.	Reach Description	Central Coastal Area: San Luis Obispo County FC&WCD	Central Coastal Area: Santa Barbara County FC&WCD	Southern California Area: Antelope Valley-East Kern Water Agency	Southern California Area: Castaic Lake Water Agency	Southern California Area: Coachella Valley Water District	Southern California Area: Crestline-Lake Arrowhead Water Agency	Southern California Area: Desert Water Agency
	CALIFORNIA AQUEDUCT							
1	Delta thru Bethany Reservoir	0.00533010	0.00983337	0.02939084	0.01285827	0.00528315	0.00133612	0.00871300
2A	Bethany Reservoir to Orestimba Creek	0.00557213	0.01027988	0.03072531	0.01343201	0.00552068	0.00139620	0.00910474
2B	Orestimba Creek to O'Neill Forebay	0.00557824	0.01029119	0.03075915	0.01345351	0.00552831	0.00139814	0.00911733
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557719	0.01028923	0.03075332	0.01345294	0.00552772	0.00139798	0.00911637
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557607	0.01028717	0.03074719	0.01345233	0.00552710	0.00139784	0.00911536
5	Panoche Creek to Five Points	0.00557467	0.01028462	0.03073954	0.01345157	0.00552633	0.00139763	0.00911409
6	Five Points to Arroyo Pasajero	0.00557257	0.01028074	0.03072799	0.01345042	0.00552517	0.00139733	0.00911216
7	Arroyo Pasajero to Kettleman City	0.00557189	0.01027949	0.03072428	0.01345006	0.00552480	0.00139723	0.00911154
8C	Kettleman City thru Milham Avenue	0.00557103	0.01027792	0.03071961	0.01344960	0.00552432	0.00139712	0.00911076
8D	Milham Avenue thru Avenal Gap	0.00568611	0.01049020	0.03135418	0.01373353	0.00563986	0.00142632	0.00930130
9	Avenal Gap thru Twisselman Road			0.03426625	0.01356094	0.00616886	0.00156011	0.01017373
10A	Twisselman Road thru Lost Hills			0.03481391	0.01377767	0.00626946	0.00158556	0.01033963
11B	Lost Hills to 7th Standard Road			0.03835043	0.01517717	0.00691699	0.00174933	0.01140749
12D	7th Standard Road thru Elk Hills Road			0.04031661	0.01595523	0.00727790	0.00184059	0.01200265
12E	Elk Hills Road thru Tupman Road			0.04037074	0.01597665	0.00728878	0.00184332	0.01202059
13B	Tupman Road to Buena Vista Pumping Plant			0.04379882	0.01733322	0.00791595	0.00200194	0.01305492
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04599268	0.01820137	0.00831952	0.00210399	0.01372049
14B	Santiago Creek thru Old River Road			0.04682530	0.01853084	0.00847388	0.00214303	0.01397505
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04825217	0.01909545	0.00873768	0.00220973	0.01441013
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04905609	0.01941356	0.00888679	0.00224744	0.01465600
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.05089794	0.02014241	0.00922722	0.00233351	0.01521742
17E	Edmonston Pumping Plant to Porter Tunnel			0.05329388	0.02109050	0.00967107	0.00244575	0.01594937
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05340725	0.02113537	0.00969176	0.00245098	0.01598349
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13238112		0.02399391	0.00606795	0.03957043
19	Alamo Powerplant to Fairmont			0.13237766		0.02399451	0.00606811	0.03957141
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06847931		0.02576425	0.00651573	0.04249001
20B	70th Street West to Palmdale			0.02276024		0.02702917	0.00683555	0.04457607
21	Palmdale to Littlerock Creek			0.02318952		0.02754716	0.00696651	0.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01181870		0.02794143	0.00706621	0.04608043
22B	Pearblossom Pumping Plant to West Fork Mojave River					0.02827552	0.00715074	0.04663153
23	West Fork Mojave River to Silverwood Lake					0.00324449	0.00818122	0.00535117
24	Cedar Springs Dam and Silverwood Lake					0.01024605	0.01251569	0.01690478
25	Silverwood Lake to South Portal San Bernardino Tunnel							
26A	South Portal, San Bernardino Tunnel thru Devil Canyon Pwp.							
28G	Devil Canyon Powerplant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch, Calif. Aqueduct thru Oso P. P.				0.03544337			
29F	Oso Pumping Plant thru Quail Embankment				0.03544339			
29G	Quail Embankment thru Warne Powerplant				0.03544339			
29H	Pyramid Dam and Lake				0.02817144			
29J	Pyramid Lake thru Castaic Powerplant				0.03544338			
30	Castaic Dam and Lake				0.02927284			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560301	0.19482503		0.07364766			
33A	Devil's Den Pumping Plant thru San Luis Obispo Powerplant	0.35150791	0.64849209					
34	San Luis Obispo Powerplant to Arroyo Grande	0.24688802	0.75311198					
35	Arroyo Grande thru Santa Maria Terminus	0.18022521	0.81977479					

TABLE B-1

Factors for Distributing Reach Capital Costs Among Contractors

Reach No.	San Joaquin Valley Area							
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency: Municipal and Industrial	Kern County Water Agency: Agricultural	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
	CALIFORNIA AQUEDUCT							
1	0.01707770	0.00088678	0.00254693	0.02741768	0.30629913	0.00090695	0.00167121	0.03504975
2A	0.01781031	0.00092482	0.00266258	0.02864263	0.31945188	0.00094747	0.00174288	0.03655331
2B	0.01785838	0.00092731	0.00266550	0.02868743	0.32030556	0.00094896		0.03665201
3	0.01786337	0.00092757	0.00266499	0.02868589	0.32039254	0.00094892		0.03666225
4	0.01786863	0.00092785	0.00266446	0.02868428	0.32048398	0.00094886		0.03667303
5	0.01787517	0.00092819	0.00266380	0.02868227	0.32059816	0.00094879		0.03668649
6	0.01788508	0.00092870	0.00266279	0.02867923	0.32077093	0.00094868		0.03670685
7	0.01788826	0.00092887	0.00266246	0.02867825	0.32082633	0.00094864		0.03671338
8C	0.01789228	0.00092909	0.00266205	0.02867702	0.32089625	0.00094859		0.03672162
8D	0.01828779	0.00271703	0.02928147	0.32798200	0.01820857			
9				0.03204523	0.32739538			
10A				0.03257442	0.31658608			
11B				0.03597398	0.24684668			
12D				0.03787171	0.20804762			
12E				0.03793198	0.20695175			
13B				0.01458796	0.16600071			
14A				0.00620338	0.13319181			
14B				0.00632023	0.11741558			
14C				0.00651962	0.09039633			
15A				0.00663252	0.07516317			
16A				0.00688973	0.04028829			
17E				0.00212516				
31A			0.05046240		0.57546190			

Reach No.	Southern California Area (continued)								Total
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Municipal Water District	San Gabriel Valley Municipal Water District	San Gorgonio Pass Water Agency	Metropolitan Water District of Southern California	Ventura County Flood Control District	
1	0.00049180	0.01101147	0.00369131	0.02362857	0.00650354	0.00398392	0.43929350	0.00429212	1.00000000
2A	0.00051413	0.01151136	0.00385891	0.02469101	0.00679699	0.00416304	0.45921072	0.00448701	1.00000000
2B	0.00051469	0.01152409	0.00386317	0.02472511	0.00680570	0.00416880	0.45973548	0.00449194	1.00000000
3	0.00051461	0.01152193	0.00386244	0.02472246	0.00680478	0.00416835	0.45965407	0.00449108	1.00000000
4	0.00051451	0.01151965	0.00386167	0.02471968	0.00680380	0.00416787	0.45956848	0.00449019	1.00000000
5	0.00051440	0.01151681	0.00386070	0.02471620	0.00680259	0.00416730	0.45946161	0.00448907	1.00000000
6	0.00051419	0.01151251	0.00385926	0.02471095	0.00680076	0.00416640	0.45929991	0.00448738	1.00000000
7	0.00051413	0.01151113	0.00385879	0.02470927	0.00680016	0.00416612	0.45924807	0.00448685	1.00000000
8C	0.00051405	0.01150938	0.00385821	0.02470716	0.00679941	0.00416576	0.45918261	0.00448616	1.00000000
8D	0.00052466	0.01174718	0.00393793	0.02522383	0.00694100	0.00425288	0.46868533	0.00457883	1.00000000
9	0.00057339	0.01283841	0.00430367	0.02758959	0.00758975	0.00465175	0.51227887	0.00500407	1.00000000
10A	0.00058254	0.01304366	0.00437246	0.02803943	0.00771262	0.00472760	0.52049091	0.00508405	1.00000000
11B	0.00064171	0.01436906	0.00481665	0.03093503	0.00850448	0.00521581	0.57349473	0.00560046	1.00000000
12D	0.00067463	0.01510596	0.00506361	0.03254889	0.00894541	0.00548790	0.60297374	0.00588755	1.00000000
12E	0.00067553	0.01512626	0.00507040	0.03259749	0.00895830	0.00549608	0.60379667	0.00589546	1.00000000
13B	0.00073290	0.01641098	0.00550099	0.03540212	0.00972547	0.00596896	0.65516902	0.00639604	1.00000000
14A	0.00076961	0.01723325	0.00577656	0.03720681	0.01021819	0.00627322	0.68807273	0.00671639	1.00000000
14B	0.00078354	0.01754538	0.00588113	0.03789703	0.01040613	0.00638960	0.70057530	0.00683798	1.00000000
14C	0.00080743	0.01808019	0.00606036	0.03907670	0.01072763	0.00658850	0.72199174	0.00704634	1.00000000
15A	0.00082089	0.01838154	0.00616135	0.03974336	0.01090913	0.00670088	0.73406357	0.00716371	1.00000000
16A	0.00085171	0.01907194	0.00639271	0.04126559	0.01132404	0.00695754	0.76170731	0.00743264	1.00000000
17E	0.00089182	0.01997003	0.00669365	0.04325018	0.01186455	0.00729213	0.79767940	0.00778251	1.00000000
17F	0.00089372	0.02001251	0.00670788	0.04334270	0.01188988	0.00730773	0.79937767	0.00779906	1.00000000
18A	0.00221525	0.04960424	0.01662680	0.10730448	0.02944860	0.01809192	0.57469530		1.00000000
19	0.00221522	0.04960300	0.01662640	0.10730707	0.02944876	0.01809230	0.57469556		1.00000000
19C									1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161798	0.01942666	0.61700971		1.00000000
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316986	0.02038045	0.64729087		1.00000000
21	0.00254199	0.05692053		0.12319480	0.03380324	0.02077093	0.65963498		1.00000000
22A		0.05773082		0.12495766	0.03428605	0.02106816	0.66905054		1.00000000
22B		0.05842136		0.12645207	0.03469614	0.02132008	0.67705256		1.00000000
23				0.14467451	0.03969010	0.02439237	0.77446614		1.00000000
24				0.22243002	0.04339444	0.02843498	0.66607404		1.00000000
25				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
26A				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
28G				0.05126137			0.94873863		1.00000000
28H							1.00000000		1.00000000
28J							1.00000000		1.00000000
29A							0.95147783	0.01307880	1.00000000
29F							0.95147785	0.01307876	1.00000000
29G							0.95147785	0.01307876	1.00000000
29H							0.96278381	0.00904475	1.00000000
29J							0.95147787	0.01307875	1.00000000
30							0.96212388	0.00860328	1.00000000
31A									1.00000000
33A									1.00000000
34									1.00000000
35									1.00000000

TABLE B-2

Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

Reach No.	Reach Description	North Bay Area		South Bay Area				Total
		Napa County FC&WCD	Solano County Water Agency	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Future Contractor	
	NORTH BAY AQUEDUCT							
1	Barker Slough thru Fairfield/Vacaville Turnout	0.27960541	0.72039459					1.00000000
2	Fairfield/Vacaville Turnout to Cordelia Forebay	0.38414552	0.61585448					1.00000000
3A	Cordelia Forebay thru Benicia and Vallejo Turnouts		1.00000000					1.00000000
3B	Cordelia Forebay thru Napa Turnout Reservoir	1.00000000						1.00000000
	SOUTH BAY AQUEDUCT							
1	Bethany Reservoir thru Altamont Turnout			0.22599612	0.20663021	0.49237700	0.07499667	1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.22599658	0.20663059	0.49237783	0.07499500	1.00000000
4	Patterson Reservoir to Del Valle Junction			0.19504795	0.21450017	0.51113249	0.07931939	1.00000000
5	Del Valle Junction thru Lake Del Valle			0.14436367	0.12972254	0.33715573	0.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.14599918	0.21144710	0.50574745	0.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				0.25176680	0.60218448	0.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.27934645	0.72065355		1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
	CALIFORNIA AQUEDUCT							
1	Delta thru Bethany Reservoir			0.00954737	0.00872917	0.02080118	0.00342507	N/A

Reach No.	Reach Description	Central Coastal Area		Southern California Area				
		San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency
	CALIFORNIA AQUEDUCT							
1	Delta thru Bethany Reservoir	0.00533010	0.00983337	0.02939084	0.01285827	0.00528315	0.00133612	0.00871300
2A	Bethany Reservoir to Orestimba Creek	0.00557213	0.01027988	0.03072531	0.01343201	0.00552068	0.00139620	0.00910474
2B	Orestimba Creek to O'Neill Forebay	0.00557824	0.01029119	0.03075915	0.01345351	0.00552831	0.00139814	0.00911733
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557719	0.01028923	0.03075332	0.01345294	0.00552772	0.00139798	0.00911637
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557607	0.01028717	0.03074719	0.01345233	0.00552710	0.00139784	0.00911536
5	Panoche Creek to Five Points	0.00557467	0.01028462	0.03073954	0.01345157	0.00552633	0.00139763	0.00911409
6	Five Points to Arroyo Pasajero	0.00557257	0.01028074	0.03072799	0.01345042	0.00552517	0.00139733	0.00911216
7	Arroyo Pasajero to Kettleman City	0.00557189	0.01027949	0.03072428	0.01345006	0.00552480	0.00139723	0.00911154
8C	Kettleman City thru Milham Avenue	0.00551596	0.01017632	0.03041581	0.01329997	0.00546583	0.00138232	0.00901430
8D	Milham Avenue thru Avenal Gap	0.00562824	0.01038343	0.03103491	0.01357628	0.00557838	0.00141078	0.00919992
9	Avenal Gap thru Twisselman Road			0.03387464	0.01340600	0.00609344	0.00154104	0.01004936
10A	Twisselman Road thru Lost Hills			0.03440598	0.01361627	0.00619088	0.00156569	0.01021004
11B	Lost Hills to 7th Standard Road			0.03783014	0.01497132	0.00681674	0.00172398	0.01124216
12D	7th Standard Road thru Elk Hills Road			0.03972579	0.01572148	0.00716403	0.00181179	0.01181489
12E	Elk Hills Road thru Tupman Road			0.03977669	0.01574162	0.00717426	0.00181437	0.01183175
13B	Tupman Road to Buena Vista Pumping Plant			0.04307711	0.01704769	0.00777681	0.00196675	0.01282547
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04517714	0.01787870	0.00816225	0.00206423	0.01346114
14B	Santiago Creek thru Old River Road			0.04596983	0.01819238	0.00830887	0.00210130	0.01370294
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04732690	0.01872938	0.00855917	0.00216459	0.01411577
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04808935	0.01903108	0.00870025	0.00220027	0.01434839
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.04983435	0.01972161	0.00902198	0.00228161	0.01487897
17E	Edmonston Pumping Plant to Porter Tunnel			0.05209597	0.02061656	0.00943985	0.00238729	0.01556809
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05220390	0.02065927	0.00945949	0.00239225	0.01560048
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13238112		0.02399391	0.00606795	0.03957043
19	Alamo Powerplant to Fairmont			0.13237766		0.02399451	0.00606811	0.03957141
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06847931		0.02576425	0.00651573	0.04249001
20B	70th Street West to Palmdale			0.02276024		0.02702917	0.00683555	0.04457607
21	Palmdale to Littlerock Creek			0.02318952		0.02754716	0.00696651	0.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01181870		0.02794143	0.00706621	0.04608043
22B	Pearblossom Pumping Plant to West Fork Mojave River					0.02827552	0.00715074	0.04663153
23	West Fork Mojave River to Silverwood Lake					0.00324449	0.00818122	0.00535117
24	Cedar Springs Dam and Silverwood Lake					0.01024605	0.01251569	0.01690478
25	Silverwood Lake to South Portal San Bernardino Tunnel							
26A	South Portal, San Bernardino Tunnel thru Devil Canyon Pwp.							
28G	Devil Canyon Powerplant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch, Calif. Aqueduct thru Oso P. P.			0.00302472	0.03533617			
29F	Oso Pumping Plant thru Quail Embankment			0.00302551	0.03533615			
29G	Quail Embankment thru Warne Powerplant				0.03544339			
29H	Pyramid Dam and Lake				0.02817144			
29J	Pyramid Lake thru Castaic Powerplant				0.03544338			
30	Castaic Dam and Lake				0.02927284			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560301	0.19482503		0.07364766			
33A	Devil's Den Pumping Plant thru San Luis Obispo Powerplant	0.35150791	0.64849209					
34	San Luis Obispo Powerplant to Arroyo Grande	0.24688802	0.75311198					
35	Arroyo Grande thru Santa Maria Terminus	0.18022521	0.81977479					

TABLE B-2

Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

Reach No.	San Joaquin Valley Area							
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency: Municipal and Industrial	Kern County Water Agency: Agricultural	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
	CALIFORNIA AQUEDUCT							
1	0.01707770	0.00088678	0.00254693	0.02741768	0.30629913	0.00090695	0.00167121	0.03504975
2A	0.01781031	0.00092482	0.00266258	0.02864263	0.31945188	0.00094747	0.00174288	0.03655331
2B	0.01785838	0.00092731	0.00266550	0.02868743	0.32030556	0.00094896	0.03665201	
3	0.01786337	0.00092757	0.00266499	0.02868589	0.32039254	0.00094892	0.03666225	
4	0.01786863	0.00092785	0.00266446	0.02868428	0.32048398	0.00094886	0.03667303	
5	0.01787517	0.00092819	0.00266380	0.02868227	0.32059816	0.00094879	0.03668649	
6	0.01788508	0.00092870	0.00266279	0.02867923	0.32077093	0.00094868	0.03670685	
7	0.01788826	0.00092887	0.00266246	0.02867825	0.32082633	0.00094864	0.03671338	
8C	0.01789228	0.00092909	0.00266205	0.02867702	0.32089625	0.00094859	0.03672162	
8D	0.01828779	0.00271703	0.02928147	0.32798200	0.01820857			
9	0.03204523	0.32739538						
10A	0.03257442	0.31658608						
11B	0.03597398	0.24684668						
12D	0.03787171	0.20804762						
12E	0.03793198	0.20695175						
13B	0.01458796	0.16600071						
14A	0.00620338	0.13319181						
14B	0.00632023	0.11741558						
14C	0.00651962	0.09039633						
15A	0.00663252	0.07516317						
16A	0.00688973	0.04028829						
17E	0.00212516							
31A	0.05046240	0.57546190						

Reach No.	Southern California Area (continued)								Total
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Municipal Water District	San Gabriel Valley Municipal Water District	San Gorgonio Pass Water Agency	Metropolitan Water District of Southern California	Ventura County Flood Control District	
1	0.00049180	0.01101147	0.00369131	0.02362857	0.00650354	0.00398392	0.43929350	0.00429212	1.00000000
2A	0.00051413	0.01151136	0.00385891	0.02469101	0.00679699	0.00416304	0.45921072	0.00448701	1.00000000
2B	0.00051469	0.01152409	0.00386317	0.02472511	0.00680570	0.00416880	0.45973548	0.00449194	1.00000000
3	0.00051461	0.01152193	0.00386244	0.02472246	0.00680478	0.00416835	0.45965407	0.00449108	1.00000000
4	0.00051451	0.01151965	0.00386167	0.02471968	0.00680380	0.00416787	0.45956848	0.00449019	1.00000000
5	0.00051440	0.01151681	0.00386070	0.02471620	0.00680259	0.00416730	0.45946161	0.00448907	1.00000000
6	0.00051419	0.01151251	0.00385926	0.02471095	0.00680076	0.00416640	0.45929991	0.00448738	1.00000000
7	0.00051413	0.01151113	0.00385879	0.02470927	0.00680016	0.00416612	0.45924807	0.00448685	1.00000000
8C	0.00050897	0.01139543	0.00382005	0.02444566	0.00672913	0.00412167	0.46607904	0.00444181	1.00000000
8D	0.00051932	0.01162742	0.00389782	0.02494901	0.00686714	0.00420655	0.47563362	0.00453222	1.00000000
9	0.00056683	0.01269152	0.00425448	0.02725243	0.00749914	0.00459491	0.51939559	0.00494690	1.00000000
10A	0.00057571	0.01289064	0.00432121	0.02768814	0.00761823	0.00466838	0.52763907	0.00502449	1.00000000
11B	0.00063300	0.01417390	0.00475129	0.03048687	0.00838406	0.00514026	0.58065667	0.00552450	1.00000000
12D	0.00066474	0.01488434	0.00498939	0.03203990	0.00880866	0.00540209	0.61004998	0.00580129	1.00000000
12E	0.00066559	0.01490343	0.00499577	0.03208558	0.00882077	0.00540978	0.61088592	0.00580873	1.00000000
13B	0.00072082	0.01614026	0.00541032	0.03478013	0.00955838	0.00586410	0.66195198	0.00629068	1.00000000
14A	0.00075596	0.01692733	0.00567410	0.03650376	0.01002933	0.00615469	0.69455166	0.00659733	1.00000000
14B	0.00076922	0.01722449	0.00577366	0.03715939	0.01020799	0.00626523	0.70691589	0.00671309	1.00000000
14C	0.00079194	0.01773312	0.00594412	0.03827874	0.01051330	0.00645397	0.72804676	0.00691126	1.00000000
15A	0.00080471	0.01801891	0.00603990	0.03890949	0.01068518	0.00656030	0.73994080	0.00702257	1.00000000
16A	0.00083391	0.01867297	0.00625909	0.04034814	0.01107764	0.00680287	0.76710412	0.00727736	1.00000000
17E	0.00087177	0.01952067	0.00654315	0.04221660	0.01158699	0.00711787	0.80235512	0.00760762	1.00000000
17F	0.00087358	0.01956112	0.00655671	0.04230442	0.01161106	0.00713268	0.80402166	0.00762338	1.00000000
18A	0.00221525	0.04960424	0.01662680	0.10730448	0.02944860	0.01809192	0.57469530	1.00000000	
19	0.00221522	0.04960300	0.01662640	0.10730707	0.02944876	0.01809230	0.57469556		1.00000000
19C									1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161798	0.01942666	0.61700971		1.00000000
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316986	0.02038045	0.64729087		1.00000000
21	0.00254199	0.05692053		0.12319480	0.03380324	0.02077093	0.65963498		1.00000000
22A		0.05773082		0.12495766	0.03428605	0.02106816	0.66905054		1.00000000
22B		0.05842136		0.12645207	0.03469614	0.02132008	0.67705256		1.00000000
23				0.14467451	0.03969010	0.02439237	0.77446614		1.00000000
24				0.22243002	0.04339444	0.02843498	0.66607404		1.00000000
25				0.11825184	0.03722720	0.01993915	0.82458181		1.00000000
26A				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
28G				0.05126137			0.94873863		1.00000000
28H							1.00000000		1.00000000
28J							1.00000000		1.00000000
29A							0.94859988	0.01303923	1.00000000
29F							0.94859915	0.01303919	1.00000000
29G							0.95147785	0.01307876	1.00000000
29H							0.96278381	0.00904475	1.00000000
29J							0.95147787	0.01307875	1.00000000
30							0.96212388	0.00860328	1.00000000
31A									1.00000000
33A									1.00000000
34									1.00000000
35									1.00000000

TABLE B-3

Power 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 Barker Slough Pumping Plant (1)	Reach 3A Cordelia Pumping Plant Solano (2)	Reach 3B Cordelia Pumping Plant Napa (a (3)	Reach 1(b South Bay & Del Valle Pumping Plants (4)	Reach 1 Banks Pumping Plant (5)	Reach 4 Dos Amigos Pumping Plant (6)	Reach 14A Buena Vista Pumping Plant (7)	Reach 15A Teerink Pumping Plant (8)	Reach 16A Chrisman Pumping Plant (9)	Reach 17E 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	2,565,618	1,987,540	1,395,708	1,393,914	3,010,466	9,893,978
1982	0	0	12,080	485,085	3,732,557	1,472,843	1,348,814	1,401,199	2,817,812	9,853,587
1983	0	0	2,333	117,847	1,381,248	412,348	431,515	421,388	763,759	2,307,188
1984	0	0	4,854	282,748	1,834,751	949,018	801,848	747,345	1,412,330	4,379,455
1985	0	0	10,211	454,973	3,271,195	1,702,552	1,565,835	1,600,549	3,250,144	10,857,355
1986	0	0	15,455	845,875	7,373,656	2,718,997	2,573,965	2,632,451	5,465,227	18,526,707
1987	0	0	27,222	912,939	5,303,452	2,599,573	2,301,577	2,335,146	4,617,914	15,159,620
1988	18,184	38,104	23,970	934,130	5,889,062	2,693,580	2,652,550	2,687,022	5,346,292	17,594,003
1989	25,919	94,620	6,642	1,113,352	11,263,463	4,126,194	4,089,366	4,163,006	8,737,915	29,111,135
1990	58,957	138,734	43,103	1,895,010	9,784,178	4,750,454	5,989,171	6,328,450	14,254,226	50,140,948
1991	12,008	18,194	5,724	508,057	1,891,630	253,895	865,041	978,187	2,413,561	8,668,078
1992	15,492	26,737	9,474	325,225	2,951,555	1,222,951	1,314,813	1,387,350	2,789,842	9,283,175
1993	(16,821)	38,914	(6,287)	(165,010)	3,058,693	408,644	(86,331)	(95,462)	(590,871)	(2,288,371)
1994	66,665	134,832	32,408	852,222	4,466,000	2,534,895	2,552,735	2,633,080	5,561,745	18,775,227
1995	21,355	67,223	11,570	250,181	4,864,870	1,656,551	859,013	706,573	1,320,372	4,256,482
1996	58,715	36,847	39,051	802,403	7,198,970	3,102,149	2,350,484	2,529,997	4,627,260	14,986,120
1997	136,638	83,156	84,913	2,173,928	11,137,827	4,396,212	4,071,911	4,448,783	9,384,454	32,936,764
1998	132,662	79,657	85,138	2,078,673	11,083,127	4,423,886	4,286,617	4,733,696	10,012,265	35,197,346
1999	113,068	73,475	75,623	1,969,401	11,613,726	4,508,137	4,587,155	5,034,484	10,644,277	37,423,640
2000	130,863	81,147	102,742	2,524,536	17,244,296	6,627,540	7,513,719	8,445,152	17,959,510	63,378,342
2001	178,060	120,030	121,577	2,987,154	24,096,852	9,577,318	11,631,905	13,558,054	28,914,528	102,233,829
2002	185,062	128,117	125,028	3,071,961	24,997,161	9,946,565	12,115,642	14,130,208	30,141,043	106,584,507
2003	189,627	134,564	126,728	3,113,719	25,233,282	10,041,526	12,209,065	14,235,418	30,362,474	107,361,222
2004	194,762	141,316	128,870	3,166,358	25,696,927	10,204,764	12,403,930	14,461,936	30,845,251	109,067,232
2005	180,777	130,111	118,653	2,915,318	23,649,754	9,398,448	11,425,709	13,321,668	28,413,375	100,468,713
2006	181,191	131,157	119,606	2,938,738	23,963,521	9,477,548	11,523,529	13,436,133	28,657,726	101,333,412
2007	183,528	132,717	121,029	2,973,700	24,332,647	9,593,075	11,665,699	13,602,090	29,011,986	102,586,454
2008	185,722	134,145	122,331	3,005,700	24,365,594	9,697,751	11,793,264	13,751,005	29,329,691	103,709,871
2009	187,964	135,604	123,662	3,038,387	24,700,780	9,803,382	11,921,573	13,900,550	29,648,584	104,837,646
2010	190,506	137,275	125,186	3,075,834	25,106,821	9,892,269	12,011,544	14,002,504	29,863,658	105,592,928
2011	192,530	138,570	126,367	3,104,846	25,280,756	10,008,522	12,166,006	14,184,711	30,254,024	106,976,917
2012	194,736	139,993	127,664	3,136,729	25,338,041	10,116,726	12,300,532	14,341,975	30,589,986	108,165,877
2013	200,566	144,014	131,331	3,226,825	25,971,120	10,436,292	12,705,337	14,816,841	31,604,847	111,758,990
2014	203,485	145,938	133,086	3,269,950	26,231,590	10,394,940	12,552,955	14,621,901	31,175,815	110,212,631
2015	205,485	147,200	134,236	3,298,207	26,585,302	10,665,370	12,983,163	15,140,592	32,295,312	114,200,436
2016	203,976	146,808	133,879	3,289,434	26,652,112	10,584,762	12,855,499	14,986,863	31,963,454	113,018,333
2017	204,324	147,059	134,108	3,295,049	26,643,280	10,629,616	12,925,472	15,070,976	32,144,915	113,664,276
2018	204,828	147,422	134,439	3,303,179	26,684,172	10,654,433	12,954,907	15,105,060	32,217,562	113,921,025
2019	204,854	147,440	134,456	3,303,595	26,709,750	10,654,006	12,953,321	15,103,162	32,213,276	113,905,634
2020	204,965	147,520	134,529	3,305,390	26,714,658	10,677,237	12,991,215	15,148,912	32,312,169	114,258,141
2021	200,359	144,205	131,505	3,231,107	26,274,229	10,425,745	12,678,802	14,783,538	31,532,056	111,497,438
2022	200,308	144,169	131,472	3,230,282	26,030,696	10,418,595	12,667,060	14,769,350	31,501,525	111,388,773
2023	200,193	144,085	131,396	3,228,422	26,188,407	10,421,865	12,676,788	14,781,703	31,528,388	111,485,533
2024	200,238	144,117	131,426	3,229,151	26,142,119	10,425,022	12,680,630	14,786,198	31,538,095	111,519,825
2025	199,963	143,920	131,245	3,224,716	26,208,799	10,400,291	12,644,941	14,743,549	31,446,385	111,194,103
2026	199,654	143,698	131,043	3,219,737	25,975,415	10,394,845	12,644,152	14,743,758	31,447,445	111,199,493
2027	199,525	143,605	130,958	3,217,659	26,120,176	10,373,708	12,610,329	14,702,835	31,359,277	110,885,269
2028	197,191	141,925	129,426	3,180,009	25,701,370	10,265,289	12,485,776	14,558,913	31,053,109	109,804,787
2029	197,178	141,916	129,418	3,179,808	25,861,458	10,262,817	12,481,866	14,554,097	31,042,907	109,768,360
2030	197,397	142,073	129,561	3,183,330	25,761,199	10,290,091	12,524,167	14,604,979	31,152,575	110,158,665
2031	196,976	141,771	129,285	3,176,554	25,550,447	10,250,787	12,467,159	14,536,999	31,006,151	109,638,281
2032	197,000	141,788	129,301	3,176,937	25,771,252	10,239,187	12,445,701	14,510,679	30,949,118	109,434,626
2033	197,065	141,834	129,343	3,177,978	25,767,378	10,252,204	12,466,878	14,536,250	31,004,358	109,631,517
2034	196,948	141,750	129,267	3,176,101	25,750,681	10,234,636	12,439,176	14,502,876	30,932,384	109,375,108
2035	197,559	142,189	129,668	3,185,954	26,495,505	10,283,235	12,507,349	14,583,953	31,106,554	109,993,733
TOTAL	7,628,207	5,831,685	5,323,686	136,917,074	1,045,157,091	416,589,904	491,941,491	566,819,135	1,205,310,101	4,249,003,399

a) Power costs for the period 1968 through 1987 are for an interim facility.
b) The costs of Del Valle Pumping Plant are combined with those of South Bay Pumping Plant to simplify the cost allocations.

TABLE B-3

Power Costs and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant

(Dollars)

Calendar Year	California Aqueduct (continued)									Grand Total (20)
	Reach 18A	Reach 22B	Reach 23	Reach 26A	Reach 29A	Reach 29G	Reach 29J	Reach 31A	Reach 33A	
	Alamo 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 PPs and San Luis Obispo Pwp. (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	2,201,541	0	(3,772,498)	514,832	0	(3,248,819)	186,954	0	16,783,783
1982	0	1,708,843	0	(3,149,543)	625,731	(973,898)	(3,476,126)	182,343	0	16,041,327
1983	0	384,150	0	(5,764,122)	234,998	(1,373,756)	(4,112,979)	18,778	0	(4,775,305)
1984	0	673,007	0	(7,751,311)	435,350	(2,269,583)	1,601,424	116,056	0	3,217,292
1985	0	1,249,530	0	(10,518,533)	1,048,791	(8,489,604)	(19,846,333)	154,762	0	(13,688,573)
1986	(1,064,432)	2,618,876	0	(12,055,463)	1,388,243	(6,276,296)	(11,466,466)	318,097	0	13,614,892
1987	(1,032,312)	1,928,366	0	(10,781,802)	1,390,585	(6,703,320)	(11,630,565)	270,952	0	6,699,347
1988	(773,793)	2,432,617	0	(14,655,710)	1,489,871	(7,384,227)	(12,676,489)	235,508	0	6,544,674
1989	(772,111)	4,337,002	0	(18,944,080)	2,147,213	(8,713,183)	(14,657,167)	311,766	0	26,441,052
1990	(845,641)	6,818,741	0	(21,336,948)	3,032,949	(11,692,826)	(19,863,014)	467,835	0	49,964,327
1991	(328,247)	824,464	0	(5,433,436)	547,023	(4,762,002)	(8,268,792)	(444,467)	0	(2,251,082)
1992	(974,183)	1,228,179	0	(9,773,109)	769,531	(5,530,268)	(9,353,608)	79,953	0	(4,226,891)
1993	(60,517)	(372,735)	0	(7,861,479)	142,473	(4,988,529)	(10,262,109)	(45,166)	0	(23,190,964)
1994	(64,484)	2,625,007	0	(12,005,935)	1,224,990	(6,187,244)	(10,729,791)	239,995	0	12,712,347
1995	(1,275,650)	1,075,751	0	(10,169,650)	(116,710)	(2,790,060)	(6,843,875)	129,527	0	(5,976,477)
1996	(2,520,984)	2,252,269	0	(10,280,176)	1,244,608	(5,059,229)	(9,431,100)	203,112	61,345	12,201,841
1997	(3,301,900)	5,231,580	(1,914,000)	(10,700,000)	1,657,432	(6,140,000)	(11,106,500)	386,425	1,330,500	44,298,123
1998	(3,619,900)	5,934,120	(3,864,000)	(16,862,500)	1,659,843	(6,427,500)	(11,596,500)	372,699	1,274,526	38,983,855
1999	(4,443,785)	6,782,224	(4,218,780)	(22,171,500)	1,569,872	(7,425,875)	(11,646,200)	541,487	1,215,936	36,246,365
2000	(5,073,266)	10,179,709	(4,839,600)	(26,393,400)	3,296,107	(11,763,450)	(18,969,600)	690,424	1,527,411	72,662,182
2001	(6,163,211)	14,315,236	(6,071,940)	(30,520,925)	6,011,988	(18,032,275)	(28,986,450)	797,392	1,848,276	126,617,398
2002	(6,296,771)	15,011,807	(6,256,380)	(30,691,650)	6,244,933	(18,166,375)	(29,257,600)	820,030	1,900,752	134,734,040
2003	(6,249,124)	15,039,823	(6,166,320)	(30,326,850)	6,317,374	(18,139,225)	(29,202,600)	831,178	1,926,588	137,038,469
2004	(6,235,874)	15,273,476	(6,082,080)	(30,595,700)	6,419,003	(18,126,550)	(29,180,050)	845,229	1,959,159	140,587,959
2005	(6,251,562)	14,086,010	(6,168,180)	(30,484,100)	5,906,725	(18,107,000)	(29,162,650)	778,216	1,803,828	122,423,813
2006	(6,245,149)	14,196,677	(6,216,480)	(30,338,200)	5,962,269	(18,141,375)	(29,202,350)	784,468	1,818,321	124,380,742
2007	(6,252,357)	14,364,832	(6,007,680)	(30,654,950)	6,039,327	(18,156,050)	(29,226,150)	793,801	1,839,951	126,943,649
2008	(6,272,497)	14,567,323	(5,966,160)	(30,560,850)	6,087,574	(18,100,625)	(29,147,450)	802,343	1,859,751	129,364,483
2009	(6,195,753)	14,656,370	(6,004,740)	(30,574,575)	6,181,439	(18,179,500)	(29,274,750)	811,068	1,879,977	131,597,668
2010	(6,152,240)	14,727,078	(5,991,240)	(30,652,650)	6,235,470	(18,123,600)	(29,174,950)	821,065	1,903,146	133,590,604
2011	(6,238,153)	14,954,414	(6,160,680)	(30,384,925)	6,306,732	(18,157,925)	(29,230,850)	828,809	1,921,098	136,271,769
2012	(6,283,521)	15,214,694	(6,170,820)	(30,508,625)	6,340,052	(18,048,450)	(29,087,650)	837,320	1,940,826	138,686,085
2013	(6,294,174)	15,699,919	(6,236,820)	(30,535,650)	6,562,702	(18,175,125)	(29,265,800)	861,370	1,996,572	145,609,157
2014	(5,946,176)	14,994,220	(5,906,220)	(30,396,600)	6,641,743	(18,156,950)	(29,229,400)	872,882	2,023,254	143,839,044
2015	(6,310,445)	16,074,518	(6,197,820)	(30,506,750)	6,693,207	(18,143,825)	(29,204,550)	880,425	2,040,738	150,980,801
2016	(6,213,773)	15,783,524	(5,917,620)	(30,631,275)	6,666,423	(18,099,075)	(29,163,650)	878,083	2,035,311	149,173,068
2017	(6,258,558)	15,926,222	(6,207,180)	(30,530,100)	6,687,340	(18,147,175)	(29,207,050)	879,582	2,038,785	150,040,941
2018	(6,272,232)	15,988,221	(6,166,140)	(30,471,550)	6,691,883	(18,121,950)	(29,157,400)	881,752	2,043,813	150,743,424
2019	(6,246,421)	15,936,107	(6,228,060)	(30,458,875)	6,710,624	(18,156,675)	(29,231,250)	881,863	2,044,071	150,580,878
2020	(6,289,828)	16,048,274	(6,210,720)	(30,412,525)	6,708,771	(18,136,925)	(29,207,400)	882,342	2,045,184	151,321,909
2021	(6,263,540)	15,630,752	(5,999,460)	(30,550,975)	6,556,919	(18,133,650)	(29,202,850)	862,513	1,999,221	145,797,914
2022	(6,260,201)	15,613,513	(6,098,220)	(30,562,600)	6,550,678	(18,117,175)	(29,182,450)	862,293	1,998,711	145,286,779
2023	(6,270,748)	15,637,322	(6,051,180)	(30,496,000)	6,553,597	(18,137,525)	(29,211,600)	861,797	1,997,559	145,670,002
2024	(6,282,514)	15,670,326	(6,065,160)	(30,658,600)	6,544,429	(18,098,875)	(29,164,350)	861,991	1,998,009	145,602,077
2025	(6,201,636)	15,559,317	(6,050,640)	(30,443,000)	6,549,924	(18,146,875)	(29,228,400)	860,807	1,995,267	145,232,676
2026	(6,283,203)	15,626,054	(6,076,320)	(30,632,175)	6,525,389	(18,098,875)	(29,164,450)	859,478	1,992,186	144,847,324
2027	(6,191,778)	15,504,995	(6,053,940)	(30,495,750)	6,535,611	(18,146,900)	(29,228,450)	858,924	1,990,899	144,516,952
2028	(6,278,486)	15,416,449	(6,134,400)	(30,503,975)	6,448,828	(18,125,325)	(29,183,750)	848,873	1,967,604	141,973,613
2029	(6,222,306)	15,390,030	(6,102,960)	(30,467,600)	6,454,891	(18,123,500)	(29,209,800)	848,819	1,967,481	142,154,880
2030	(6,258,134)	15,507,152	(6,285,600)	(30,529,775)	6,455,213	(18,128,475)	(29,182,800)	849,759	1,969,659	142,541,036
2031	(6,260,201)	15,378,252	(6,000,000)	(30,420,150)	6,444,570	(18,132,375)	(29,195,950)	847,951	1,965,468	141,721,975
2032	(6,194,958)	15,319,278	(6,068,100)	(30,595,600)	6,442,946	(18,119,400)	(29,184,500)	848,053	1,965,705	141,409,013
2033	(6,204,975)	15,354,894	(6,075,540)	(30,602,600)	6,452,629	(18,143,825)	(29,218,350)	848,331	1,966,347	141,681,716
2034	(6,198,244)	15,306,384	(6,086,640)	(30,442,175)	6,440,981	(18,133,450)	(29,185,200)	847,830	1,965,186	141,393,599
2035	(6,341,026)	15,716,619	(6,187,320)	(30,933,575)	6,350,823	(17,848,725)	(28,703,250)	850,460	1,971,282	143,500,987
TOTAL	(244,530,947)	614,313,594	(228,505,140)	(1,324,806,379)	251,210,600	(749,202,450)	(1,247,114,219)	35,945,275	73,989,703	5,301,821,783

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	25,000	45,486	70,486
1998	11,710	38,710	50,420	46,000	42,000	100,000	188,000	25,000	45,486	70,486
1999	12,330	39,170	51,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2000	13,050	39,620	52,670	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2001	13,665	40,080	53,745	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2002	14,185	40,540	54,725	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2003	14,800	41,000	55,800	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2004	15,400	41,450	56,850	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2005	16,000	41,500	57,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2006	16,450	41,550	58,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2007	17,000	41,600	58,600	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2008	17,650	41,650	59,300	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2009	18,200	41,700	59,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2010	18,750	41,750	60,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2011	19,400	41,800	61,200	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2012	19,950	41,850	61,800	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2013	20,600	41,900	62,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2014	21,250	41,950	63,200	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2015	21,900	42,000	63,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2016	22,500	42,000	64,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2017	23,100	42,000	65,100	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2018	23,700	42,000	65,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2019	24,300	42,000	66,300	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2020	24,900	42,000	66,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2021	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2022	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2023	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2024	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2025	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2026	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2027	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2028	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2029	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2030	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2031	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2032	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2033	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2034	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2035	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
TOTAL	878,695	1,848,396	2,727,091	2,494,607	2,459,248	6,510,783	11,464,638	1,227,000	2,231,494	3,458,494

a) Entitlements for the South Bay area were supplied by non-Project water for the period June 1962 through November 1967. Actual delivery quantities of Project water are shown for 1967.

b) District's Table A quantities exclude amounts during the period 1968 through 1987 that are assumed to be supplied by non-Project water.

TABLE B-4

Annual Entitlements to Project Water

(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	4,600	9,548	867,948
1984	45,100	3,000	103,600	757,000	860,600	3,100	4,800	62,611	979,211
1985	47,200	3,000	108,900	806,100	915,000	3,400	4,900	45,549	1,019,049
1986	49,300	3,000	113,400	854,800	968,200	3,700	5,100	97,200	1,126,500
1987	51,400	3,000	119,100	904,400	1,023,500	4,000	5,200	101,400	1,188,500
1988	53,500	3,000	123,900	950,700	1,074,600	4,000	5,400	105,600	1,246,100
1989	55,600	3,000	128,200	984,100	1,112,300	4,000	5,600	109,900	1,290,400
1990	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1991	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1992	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1993	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1994	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1995	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1996	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1997	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1998	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1999	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2000	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2001	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2002	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2003	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2004	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2005	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2006	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2007	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2008	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2009	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2010	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2011	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2012	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2013	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2014	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2015	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2016	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2017	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2018	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2019	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2020	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2021	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2022	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2023	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2024	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2025	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2026	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2027	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2028	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2029	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2030	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2031	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2032	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2033	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2034	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2035	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
TOTAL	3,432,735	199,000	7,693,900	58,053,670	65,747,570	233,900	353,652	6,910,055	76,876,912

TABLE B-4

Annual Entitlements to Project Water

(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	50,800	17,300	102,600	28,800
1999	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2000	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2001	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2002	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2003	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2004	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2005	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2006	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2007	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2008	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2009	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2010	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2011	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2012	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2013	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2014	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2015	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2016	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2017	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2018	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2019	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2020	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2021	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2022	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2023	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2024	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2025	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2026	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2027	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2028	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2029	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2030	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2031	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2032	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2033	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2034	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2035	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
TOTAL	7,330,000	3,069,098	1,286,111	321,556	2,107,600	127,210	2,810,043	983,720	5,909,177	1,641,322

TABLE B-4

Annual Entitlements to Project Water

(Acre-Feet)

Calendar Year	Southern California Area				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	11,538
1968	0	0	0	3,700	0	300	250	550	0	191,500
1969	0	0	0	5,000	0	350	270	620	0	267,395
1970	0	0	0	5,700	0	400	300	700	0	322,600
1971	0	0	0	6,700	0	450	440	890	0	375,590
1972	0	154,772	0	209,423	0	500	470	970	0	741,759
1973	0	354,600	0	481,100	0	600	500	1,100	0	986,252
1974	0	454,900	0	597,920	0	700	530	1,230	0	1,182,200
1975	0	555,200	0	714,950	0	1,050	560	1,610	0	1,386,869
1976	0	655,600	0	836,480	0	1,400	590	1,990	0	1,508,387
1977	0	755,900	0	954,901	0	1,800	620	2,420	0	1,667,321
1978	0	856,300	0	1,049,584	0	1,200	650	1,850	0	1,818,034
1979	0	956,600	0	1,190,573	0	1,450	680	2,130	0	2,028,088
1980	6,800	1,057,000	1,000	1,317,614	0	1,100	710	1,810	0	2,214,770
1981	7,800	1,157,300	2,000	1,432,065	0	1,200	740	1,940	0	2,392,468
1982	8,800	1,257,600	3,000	1,550,449	0	1,200	770	1,970	0	2,574,545
1983	9,800	1,358,000	4,000	1,681,257	0	1,200	800	2,000	0	2,701,994
1984	10,800	1,458,300	5,000	1,744,098	1,600	1,200	830	3,630	0	2,884,337
1985	11,800	1,558,700	6,000	1,864,849	1,700	1,200	860	3,760	0	3,055,846
1986	12,900	1,659,300	8,000	1,983,890	2,100	1,200	890	4,190	0	3,292,290
1987	14,000	1,759,800	10,000	2,103,941	2,500	1,200	920	4,620	0	3,484,115
1988	15,100	1,860,400	13,000	2,225,482	2,900	1,200	960	5,060	0	3,688,335
1989	16,200	1,961,000	16,000	2,424,633	3,300	1,200	1,000	5,500	0	3,958,190
1990	17,300	2,011,500	20,000	2,500,600	3,800	1,200	1,040	6,040	0	4,108,516
1991	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,080	11,880	0	4,130,856
1992	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,120	11,920	0	4,138,816
1993	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,160	11,960	0	4,146,966
1994	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,200	12,000	0	4,154,201
1995	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,250	12,050	0	4,163,066
1996	0	2,011,500	20,000	2,492,900	9,600	1,200	1,300	12,100	0	4,152,011
1997	0	2,011,500	20,000	2,492,900	9,600	1,200	1,350	12,150	0	4,155,151
1998	2,000	2,011,500	20,000	2,494,900	9,600	1,200	1,400	12,200	0	4,158,306
1999	3,000	2,011,500	20,000	2,495,900	9,600	1,200	1,450	12,250	0	4,160,436
2000	4,000	2,011,500	20,000	2,496,900	9,600	1,200	1,510	12,310	0	4,162,666
2001	4,000	2,011,500	20,000	2,496,900	9,600	27,500	1,570	38,670	0	4,190,101
2002	5,000	2,011,500	20,000	2,497,900	9,600	27,500	1,630	38,730	0	4,192,141
2003	6,000	2,011,500	20,000	2,498,900	9,600	27,500	1,690	38,790	0	4,194,276
2004	6,500	2,011,500	20,000	2,499,400	9,600	27,500	1,750	38,850	0	4,195,886
2005	7,000	2,011,500	20,000	2,499,900	9,600	27,500	1,810	38,910	0	4,197,096
2006	7,500	2,011,500	20,000	2,500,400	9,600	27,500	1,880	38,980	0	4,198,166
2007	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,950	39,050	0	4,208,636
2008	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,020	39,120	0	4,209,406
2009	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,090	39,190	0	4,210,076
2010	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,160	39,260	0	4,210,746
2011	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,240	39,340	0	4,211,526
2012	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,320	39,420	0	4,212,206
2013	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,410	39,510	0	4,212,996
2014	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,500	39,600	0	4,213,786
2015	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,600	39,700	0	4,214,586
2016	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,215,286
2017	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,215,886
2018	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,216,486
2019	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,086
2020	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,686
2021	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2022	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2023	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2024	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2025	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2026	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2027	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2028	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2029	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2030	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2031	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2032	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2033	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2034	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2035	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
TOTAL	764,500	112,360,272	988,000	139,698,609	449,900	997,800	112,820	1,560,520	0	235,786,264

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	Grizzly Valley Pipeline PC FC&WCD (1)	North Bay Aqueduct Reach 1 SCWA (2)	Reach 3A SCWA (3)	Reach 3B NC FC&WCD (a (4)	Total (5)	South Bay Aqueduct Reach 1 ACWD (6)	Reach 1 AC FC&WCD (7)	Reach 2 AC FC&WCD (8)	Reach 4 AC FC&WCD (9)	Reach 5 ACWD (10)
1962	0	0	0	0	0	8,412	141	353	0	0
1963	0	0	0	0	0	10,914	814	917	0	0
1964	0	0	0	0	0	19,238	248	1,425	0	0
1965	0	0	0	0	0	15,280	637	1,830	138	0
1966	0	0	0	0	0	0	2,475	2,537	499	0
1967	0	0	0	0	0	0	1,527	2,391	862	0
1968	0	0	0	1,214	1,214	0	1,608	3,799	721	0
1969	0	0	0	2,687	2,687	0	1,165	3,459	1,851	0
1970	70	0	0	3,618	3,618	0	1,345	4,558	3,182	0
1971	64	0	0	2,521	2,521	0	546	1,908	2,403	0
1972	505	0	0	3,647	3,647	0	1,066	4,605	2,041	1,489
1973	679	0	0	3,792	3,792	0	430	1,123	1,193	0
1974	648	0	0	4,870	4,870	0	177	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	11,449	19,541	6,792	37,782	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	1,300	20,894	24,281	10,425	55,600	0	204	3,037	2,910	0
1997	1,350	21,100	28,550	11,065	60,715	0	498	10,103	14,874	0
1998	1,400	21,150	28,550	11,710	61,410	0	403	10,414	15,092	0
1999	1,450	21,200	29,370	12,330	62,900	0	498	10,797	13,699	0
2000	1,510	17,900	27,740	13,050	58,690	0	463	10,995	12,357	0
2001	1,577	21,200	18,880	13,665	53,745	0	221	10,241	16,346	0
2002	1,632	21,250	19,290	14,185	54,725	0	221	10,241	16,346	0
2003	1,690	21,300	19,700	14,800	55,800	0	221	10,241	16,346	0
2004	1,766	21,350	20,100	15,400	56,850	0	221	10,241	16,346	0
2005	1,827	21,400	20,100	16,000	57,500	0	221	10,241	16,346	0
2006	1,890	21,450	20,100	16,450	58,000	0	221	10,241	16,346	0
2007	1,954	21,500	20,100	17,000	58,600	0	221	10,241	16,346	0
2008	2,020	21,550	20,100	17,650	59,300	0	221	10,241	16,346	0
2009	2,112	21,600	20,100	18,200	59,900	0	221	10,241	16,346	0
2010	2,183	21,650	20,100	18,750	60,500	0	221	10,241	16,346	0
2011	2,256	21,700	20,100	19,400	61,200	0	221	10,241	16,346	0
2012	2,332	21,750	20,100	19,950	61,800	0	221	10,241	16,346	0
2013	2,410	21,800	20,100	20,600	62,500	0	221	10,241	16,346	0
2014	2,449	21,850	20,100	21,250	63,200	0	221	10,241	16,346	0
2015	2,515	21,900	20,100	21,900	63,900	0	221	10,241	16,346	0
2016	2,580	21,900	20,100	22,500	64,500	0	221	10,241	16,346	0
2017	2,642	22,276	19,724	23,100	65,100	0	221	10,241	16,346	0
2018	2,700	22,276	19,724	23,700	65,700	0	221	10,241	16,346	0
2019	2,700	22,276	19,724	24,300	66,300	0	221	10,241	16,346	0
2020	2,700	22,276	19,724	24,900	66,900	0	221	10,241	16,346	0
2021	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2022	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2023	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2024	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2025	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2026	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2027	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2028	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2029	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2030	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2031	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2032	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2033	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2034	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
2035	2,700	22,276	19,724	25,000	67,000	0	221	10,241	16,346	0
TOTAL	101,326	917,153	938,224	952,962	2,808,339	53,844	27,665	540,094	734,580	10,399

a) For the period 1968 through 1987, deliveries are non-Project water pumped through an interim facility.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	South Bay Aqueduct (continued) (b						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 (12)	AC FC&WCD (12)	ACWD (13)	ACWD (14)	SCVWD (15)	Total (16)	OFWD (c (17)	TLBWSD (18)	SCVWD (19)	DRWD (20)	KCWA (Ag) (21)	DRWD (22)
1962	0	0	0	0	0	8,906	0	0	0	0	0	0
1963	0	0	0	0	0	12,645	0	0	0	0	0	0
1964	0	0	0	0	0	20,911	0	0	0	0	0	0
1965	0	0	1,127	0	15,014	34,026	0	0	0	0	0	0
1966	0	0	14,864	0	34,538	54,913	0	0	0	0	0	0
1967	0	0	12,882	0	39,101	56,763	0	0	0	0	0	0
1968	5	0	24,817	0	70,105	101,055	3,084	0	0	0	0	0
1969	160	0	813	0	62,264	69,712	3,016	0	0	0	0	0
1970	164	0	0	0	80,311	89,560	5,911	0	0	0	0	0
1971	160	0	5,961	0	87,606	98,584	7,212	0	0	0	0	0
1972	2,777	0	26,182	0	100,266	138,426	8,166	0	0	0	0	0
1973	229	0	2,521	0	88,582	94,078	3,214	0	0	0	0	0
1974	162	0	0	4	88,000	89,318	3,471	0	0	0	0	0
1975	120	714	393	593	88,000	93,604	3,576	0	0	0	0	0
1976	817	5,461	13,774	7,526	88,000	126,431	4,112	0	0	0	0	0
1977	524	5,206	11,284	7,556	76,220	107,704	1,472	0	0	0	0	0
1978	2,034	2,348	854	5,009	95,727	112,574	3,906	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
1980	0	6,144	2,824	6,702	88,000	115,824	5,700	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
1982	630	4,571	1,776	4,540	87,261	106,700	3,838	0	0	0	0	0
1983	50	111	0	3,157	86,733	94,656	3,822	0	0	0	0	0
1984	55	126	0	3,338	88,000	98,122	5,700	0	0	0	0	0
1985	63	7,537	11,203	7,813	88,000	122,088	5,433	0	0	0	0	0
1986	212	2,083	5,311	7,068	88,000	110,988	5,107	0	0	0	0	0
1987	285	12,993	15,488	9,902	88,000	136,796	5,625	0	0	0	0	0
1988	189	12,436	24,259	9,205	87,961	147,255	4,412	0	0	0	0	0
1989	418	10,974	17,340	8,702	90,000	142,269	6,091	300	0	602	12,647	1,898
1990	593	15,678	22,149	9,554	91,800	156,537	2,922	0	200	0	0	0
1991	359	1,945	9,155	3,493	28,200	50,259	141	0	0	0	0	0
1992	154	6,933	12,621	6,532	42,839	76,661	2,239	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
1994	822	9,679	3,379	19,532	57,115	100,568	3,071	0	0	0	0	0
1995	945	15,459	11	16,680	28,756	75,560	5,169	0	0	0	3,500	14,446
1996	686	5,563	2,899	27,967	26,021	69,287	5,700	0	0	0	0	0
1997	2,660	17,865	13,758	28,242	100,000	188,000	5,700	0	0	0	0	0
1998	2,860	17,231	13,758	28,242	100,000	188,000	5,700	0	0	0	0	0
1999	2,960	18,046	10,998	31,002	100,000	188,000	5,700	0	0	0	0	0
2000	2,960	19,225	18,134	23,866	100,000	188,000	5,700	0	0	0	0	0
2001	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2002	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2003	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2004	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2005	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2006	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2007	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2008	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2009	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2010	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2011	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2012	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2013	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2014	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2015	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2016	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2017	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2018	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2019	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2020	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2021	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2022	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2023	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2024	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2025	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2026	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2027	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2028	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2029	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2030	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2031	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2032	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2033	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2034	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
2035	1,780	17,412	9,737	32,263	100,000	188,000	5,700	0	0	0	0	0
TOTAL	97,411	833,559	654,147	1,428,273	6,222,476	10,602,448	347,717	300	200	602	16,147	16,344

b) For the period June 1962 through November 1967, deliveries were supplied by non-Project water.
c) Includes 425 AF of 1988 advance entitlement and 141 AF of 1992 advance entitlement.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)										
	San Luis Division (continued)										
	Reach 4	Reach 5					Reach 6	Reach 7			Reach 8C
Calendar Year	TLBWSD (23)	CLWA (24)	TLBWSD (25)	KCWA (Ag) (26)	DRWD (27)	OFWD (28)	KCWA (Ag) (29)	KCWA (Ag) (30)	KCWA (M&I) (31)	CLWA (32)	KCWA (M&I) (33)
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	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0
1989	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
1991	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	10,823	0	0	0	0	0	0
1993	0	5,095	1,624	28,200	27,200	2,000	31,200	10,043	18,157	0	0
1994	0	0	0	0	0	0	0	0	0	2,100	0
1995	0	0	0	21,776	0	0	3,932	20,595	10,875	0	966
1996	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1,500	5,095	1,624	68,807	38,023	2,000	43,392	35,900	29,032	2,100	966

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) (34)	DRWD (35)	TLBWSD (36)	EWSID (37)	CK (38)	KCWA (M&I) (39)	KCWA (Ag) (40)	DRWD (41)	CK (42)	TLBWSD (43)
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	25,100	1,978	900	0	0	26,360	0	0
1969	0	0	7,081	56	100	0	0	31,375	0	0
1970	0	0	0	3,942	0	0	0	40,407	0	3,408
1971	0	0	80,906	5,990	3,700	0	0	41,053	0	41,579
1972	0	0	144,843	5,795	1,400	0	0	42,443	0	113,550
1973	0	0	26,317	3,000	1,500	0	1,500	22,057	0	24,147
1974	0	0	32,603	3,000	1,500	0	0	33,390	0	39,686
1975	0	0	41,536	3,000	1,600	0	0	40,555	0	44,722
1976	0	0	26,595	3,000	1,600	0	0	41,421	0	32,216
1977	0	0	12,984	738	1,530	0	0	11,153	0	5,097
1978	0	0	3,934	454	2,070	0	0	51,747	0	8,119
1979	0	0	74,758	1,739	2,000	0	0	38,544	0	80,363
1980	0	0	35,140	894	2,200	0	0	41,000	0	34,104
1981	0	0	50,888	5,859	2,300	0	0	41,000	0	32,550
1982	0	0	4,405	361	1,536	0	0	41,000	214	14,146
1983	0	0	1,001	0	3,550	0	0	42,900	0	5
1984	0	0	3,677	0	3,100	0	0	45,100	0	2,066
1985	0	0	68,638	5,197	3,400	0	0	46,251	0	41,153
1986	0	0	40,017	1,170	3,700	0	0	50,249	0	39,338
1987	0	0	30,359	2,525	4,000	0	0	46,288	0	62,725
1988	0	0	47,831	3,775	4,000	0	0	47,994	0	48,035
1989	0	2,391	63,703	3,000	4,000	0	0	52,158	0	63,947
1990	0	0	23,504	1,279	2,000	0	161	36,296	0	32,066
1991	0	0	1,697	221	0	0	0	927	0	483
1992	0	280	15,982	1,354	1,806	0	0	12,667	0	30,746
1993	0	0	57,112	2,741	4,000	0	0	23,221	0	65,732
1994	0	0	21,510	1,666	2,116	0	1,726	28,793	0	40,852
1995	10,550	0	40,934	1,631	4,000	2,893	27,336	45,240	0	57,435
1996	0	0	100,211	1,868	4,000	0	1,455	49,925	0	159,696
1997	0	0	47,400	3,000	4,000	0	0	53,370	0	71,100
1998	0	0	47,400	3,000	4,000	0	0	53,370	0	71,100
1999	0	0	47,400	3,000	4,000	0	0	53,370	0	71,100
2000	0	0	47,400	3,000	4,000	0	0	53,370	0	71,100
2001	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2002	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2003	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2004	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2005	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2006	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2007	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2008	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2009	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2010	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2011	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2012	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2013	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2014	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2015	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2016	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2017	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2018	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2019	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2020	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2021	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2022	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2023	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2024	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2025	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2026	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2027	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2028	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2029	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2030	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2031	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2032	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2033	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2034	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
2035	0	0	47,400	3,000	4,000	0	0	57,700	0	71,100
TOTAL	10,550	2,671	2,931,866	183,233	223,608	2,893	32,178	3,304,494	214	3,890,866

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 9				Reach 10				Reach 11B	
	DRWD (44)	KCWA (M&I) (45)	KCWA (Ag) (46)	TLBWSD (47)	MWDSC (48)	KCWA (M&I) (49)	KCWA (Ag) (50)	TLBWSD (51)	KCWA (M&I) (52)	KCWA (Ag) (53)
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	30,951	0	0	0	0	0	0	24,776
1969	0	0	24,489	0	0	0	0	2,842	0	64,682
1970	0	0	46,114	1,855	0	0	158	4,315	0	72,279
1971	0	0	58,356	0	0	0	9,973	0	0	63,773
1972	0	0	75,464	0	0	0	5,876	0	0	72,358
1973	0	0	54,583	0	0	0	22,948	0	0	67,544
1974	0	0	63,814	0	0	10,019	22,719	0	0	87,476
1975	0	0	50,021	0	0	2,791	72,121	0	0	85,675
1976	0	0	53,465	0	0	74	50,444	0	0	85,067
1977	0	0	24,668	0	0	201	34,451	0	3,981	29,603
1978	0	0	72,231	0	0	0	161,889	0	0	88,753
1979	0	0	74,524	0	0	285	153,245	0	484	108,379
1980	0	0	79,946	0	0	3,780	131,836	0	3,112	103,207
1981	0	0	76,508	0	0	341	133,500	0	494	104,395
1982	0	0	76,877	0	0	4,700	164,832	0	798	99,081
1983	0	2,217	84,573	0	0	0	146,493	0	2,069	94,117
1984	0	4,100	85,732	0	0	6,910	150,302	0	2,349	124,819
1985	0	0	67,696	0	0	6,495	153,473	0	10,666	118,646
1986	0	0	79,943	0	0	5,065	198,099	0	8,673	124,836
1987	0	0	97,732	0	0	900	226,521	0	13,074	111,877
1988	0	1,100	83,858	0	0	8,229	213,795	0	13,509	114,031
1989	0	0	91,134	0	0	21,038	251,979	0	9,986	127,058
1990	0	0	83,108	0	0	25,189	47,472	0	9,319	104,107
1991	0	13,683	601	0	0	1,142	6,820	0	6,099	118
1992	0	28	40,183	0	0	3,685	89,390	0	7,419	35,093
1993	197	0	59,542	0	44,496	775	233,862	0	2,250	73,091
1994	0	0	44,994	0	0	5,227	126,792	0	3,506	71,202
1995	0	0	64,076	0	50,000	366	229,448	0	1,154	97,072
1996	0	0	112,912	0	88,141	1,456	263,850	0	1,546	109,767
1997	0	0	99,570	0	75,000	1,000	212,814	0	1,800	111,941
1998	0	0	99,570	0	75,000	1,000	212,814	0	1,800	111,941
1999	0	0	99,570	0	35,000	1,000	212,814	0	1,800	111,941
2000	0	0	99,570	0	0	1,000	212,814	0	1,800	111,941
2001	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2002	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2003	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2004	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2005	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2006	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2007	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2008	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2009	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2010	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2011	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2012	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2013	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2014	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2015	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2016	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2017	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2018	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2019	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2020	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2021	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2022	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2023	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2024	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2025	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2026	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2027	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2028	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2029	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2030	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2031	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2032	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2033	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2034	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
2035	0	0	97,970	0	0	1,500	280,234	0	15,000	133,096
TOTAL	197	21,128	5,685,325	1,855	367,637	165,168	13,961,734	7,157	632,688	7,569,006

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 KCWA (M&I) (54)	Reach 12E KCWA (Ag) (55)	Reach 12E MWDSC (56)	Reach 13B KCWA (M&I) (57)	Reach 13B KCWA (Ag) (58)	Reach 14A KCWA (M&I) (59)	Reach 14A KCWA (Ag) (60)	Reach 14B KCWA (M&I) (61)	Reach 14B KCWA (Ag) (62)
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	9,279	0	0	4,891	0	0	0	3
1971	0	28,056	0	0	0	0	23,844	0	49,929
1972	0	62,342	0	0	17,388	0	26,621	0	77,034
1973	0	13,082	0	0	9,297	0	15,328	0	47,040
1974	2,651	4,248	0	8,038	4,246	0	7,794	0	32,356
1975	0	10,787	0	8,538	7,059	0	10,306	0	27,736
1976	37,519	20,555	0	5,626	8,855	0	268	0	35,296
1977	20,280	1,737	0	0	5,024	0	8,299	0	13,539
1978	47,133	15,011	0	21,773	7,601	0	34,029	0	72,351
1979	50,740	61,567	0	5,663	17,766	3,012	27,356	0	59,413
1980	32,039	22,252	0	0	22,515	4,312	16,876	0	40,513
1981	59,917	58,470	0	7,844	14,037	4,511	13,007	8	42,753
1982	36,139	75,587	0	0	25,553	5,373	22,602	184	57,739
1983	0	10,950	0	0	3,491	1,168	20,302	0	57,922
1984	63,941	39,929	0	12,117	26,178	137	35,369	10	79,179
1985	69,839	84,117	0	0	67,711	206	33,103	0	72,855
1986	62,109	51,540	0	0	66,551	180	26,384	0	70,864
1987	95,297	86,223	0	5,609	40,374	610	30,098	9	67,710
1988	86,390	123,249	0	9,298	47,167	604	32,796	4	75,983
1989	83,965	146,544	0	5,504	57,114	721	29,292	7	82,201
1990	82,164	38,973	0	7,645	20,423	673	26,800	13	81,076
1991	8,842	303	0	0	0	768	0	0	0
1992	47,181	57,048	0	789	17,449	673	16,238	464	41,143
1993	84,822	285,554	5,504	12,798	88,157	629	17,832	0	62,493
1994	66,188	77,839	0	2,494	33,148	2,513	16,760	3,000	54,011
1995	102,150	186,119	0	4,397	115,039	3	21,234	0	67,391
1996	111,582	209,068	852	19,000	42,902	800	23,296	0	75,063
1997	94,900	126,685	0	19,000	66,950	800	22,300	0	72,100
1998	94,900	126,685	0	19,000	66,950	800	22,300	0	72,100
1999	94,900	126,685	0	19,000	66,950	800	22,300	0	72,100
2000	94,900	126,685	0	19,000	66,950	800	22,300	0	72,100
2001	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2002	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2003	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2004	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2005	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2006	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2007	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2008	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2009	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2010	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2011	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2012	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2013	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2014	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2015	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2016	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2017	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2018	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2019	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2020	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2021	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2022	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2023	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2024	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2025	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2026	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2027	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2028	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2029	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2030	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2031	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2032	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2033	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2034	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
2035	89,200	195,650	0	24,200	52,250	800	20,900	0	60,600
TOTAL	4,752,488	9,134,919	6,356	1,060,133	2,866,486	58,093	1,356,534	3,699	3,852,993

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)								
	Mojave Division (continued)								
	Reach 14C		Reach 15A		Reach 16A			Reach 18A	Reach 19
	KCWA (M&I) (63)	KCWA (Ag) (64)	KCWA (M&I) (62)	KCWA (Ag) (63)	KCWA (M&I) (64)	KCWA (Ag) (65)	AVEKWA (66)	AVEKWA (67)	AVEKWA (68)
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	24,187	0	3,552	0	0	0	0	0
1972	0	35,016	0	6,064	0	4,768	0	0	0
1973	0	19,043	0	19,916	0	1,961	0	0	0
1974	0	12,601	0	18,000	3,000	1,564	0	0	1,223
1975	0	12,783	0	35,420	3,200	9,867	0	0	7,622
1976	0	9,005	0	39,551	3,500	11,667	0	3,808	23,063
1977	0	3,757	0	6,158	3,420	685	0	1,231	8,927
1978	0	24,542	0	31,148	7,989	1,655	0	1,321	36,333
1979	0	22,372	0	38,602	2,813	15,808	0	2,098	49,910
1980	0	19,953	0	37,817	2,700	16,145	0	2,610	61,534
1981	7	18,729	0	39,033	2,636	18,156	0	2,340	65,690
1982	0	26,479	0	47,782	1,289	17,209	0	1,669	41,127
1983	0	26,613	0	37,426	1,400	17,907	0	43	26,377
1984	2	34,996	0	49,848	1,338	24,202	0	90	22,462
1985	0	31,758	0	44,078	1,309	16,820	0	8	23,440
1986	0	34,566	0	42,461	1,213	15,559	0	8	16,898
1987	9	31,019	0	34,748	1,665	10,170	0	0	15,958
1988	0	37,166	2	41,992	1,913	8,999	0	0	13,471
1989	5	37,800	2	43,239	2,668	8,649	0	0	18,007
1990	9	34,174	6	36,347	2,819	8,608	0	0	17,281
1991	0	0	0	0	2,588	343	2,000	0	728
1992	0	18,084	0	24,243	2,087	8,275	0	0	7,238
1993	0	28,103	0	27,997	2,494	9,167	0	0	13,340
1994	1,000	22,624	0	29,511	3,011	13,877	0	0	19,122
1995	0	31,285	0	26,134	3,188	15,042	0	0	20,222
1996	0	32,539	0	26,936	2,523	14,225	0	0	18,470
1997	0	31,100	0	28,500	2,200	13,400	0	0	21,249
1998	0	31,100	0	28,500	2,200	13,400	0	0	21,780
1999	0	31,100	0	28,500	2,200	13,400	0	0	22,349
2000	0	31,100	0	28,500	2,200	13,400	0	0	22,954
2001	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2002	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2003	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2004	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2005	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2006	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2007	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2008	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2009	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2010	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2011	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2012	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2013	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2014	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2015	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2016	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2017	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2018	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2019	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2020	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2021	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2022	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2023	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2024	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2025	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2026	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2027	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2028	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2029	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2030	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2031	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2032	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2033	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2034	0	30,900	0	39,400	3,900	18,800	0	144	91,877
2035	0	30,900	0	39,400	3,900	18,800	0	144	91,877
TOTAL	1,032	1,835,094	10	2,281,003	206,063	982,928	2,000	20,266	3,832,470

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 20A			Reach 20B		Reach 21		Reach 22A	Reach 22B
	PWD (72)	MWA (73)	AVEKWA (74)	PWD (75)	AVEKWA (76)	LCID (77)	PWD (78)	AVEKWA (79)	MWDSC (d (80)
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	256	1,227	22,385	6,705	0	480	0	4,679	0
1996	36	1,500	35,837	11,697	0	2,300	0	4,515	0
1997	303	1,382	34,728	16,997	0	2,300	0	4,564	0
1998	303	1,382	36,979	16,997	0	2,300	0	4,789	0
1999	303	1,382	39,375	16,997	1,096	2,300	0	5,029	0
2000	303	1,382	41,928	16,997	1,167	2,300	0	5,284	0
2001	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2002	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2003	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2004	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2005	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2006	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2007	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2008	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2009	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2010	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2011	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2012	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2013	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2014	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2015	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2016	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2017	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2018	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2019	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2020	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2021	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2022	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2023	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2024	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2025	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2026	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2027	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2028	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2029	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2030	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2031	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2032	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2033	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2034	0	0	38,379	17,300	2,355	2,300	0	5,645	0
2035	0	0	38,379	17,300	2,355	2,300	0	5,645	0
TOTAL	10,205	13,869	1,789,394	734,388	91,636	103,554	2,349	260,105	(653,216)

d) In accordance with the Exchange Agreement between the noted agencies, MWDSC assumed responsibility for payment of variable OMP&R costs on the exchange water in reaches beyond Reach 22B, and Desert Water Agency and Coachella Valley Water District for such costs from the Delta through Reach 22B. The adjustment in deliveries in Reach 22B provides for compliance with provisions for the repayment of costs under the agreement. In 1993 and after the exchange takes place in Reach 26A.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)							
	Santa Ana Division (continued)				West Branch			
	Reach 22B				Reach 23	Reach 24		Reach 26A
	CVWD (d (78)	AVEKWA (e (79)	DWA (d (80)	MWA (81)	MWA (82)	CLAWA (83)	MWA (84)	MWDSC (f (85)
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	55	0	464	0	0
1973	5,800	0	9,000	0	0	389	0	444
1974	6,400	0	10,000	0	14	627	0	84,981
1975	7,000	0	11,000	0	0	825	0	169,960
1976	7,600	0	12,000	0	0	1,002	0	215,312
1977	0	0	0	22	58	1,109	0	64,823
1978	10,084	0	15,300	0	0	1,209	0	297,708
1979	10,063	0	15,000	4,000	0	1,260	0	260,903
1980	10,884	0	17,000	4,000	0	1,239	0	300,345
1981	12,105	0	19,000	4,000	0	1,485	0	395,678
1982	13,326	0	21,000	10,500	0	1,238	0	214,566
1983	14,547	0	23,000	0	0	911	0	175,288
1984	15,768	0	25,000	0	0	1,128	0	122,311
1985	16,989	0	27,000	0	0	1,422	0	147,599
1986	18,210	0	29,000	0	0	1,506	0	215,265
1987	19,431	214	31,500	17	0	1,849	0	175,012
1988	20,652	0	34,000	9	0	2,006	0	247,101
1989	21,873	89	36,500	0	200	2,170	0	326,217
1990	23,100	10	38,100	0	0	1,827	0	399,387
1991	6,930	0	11,430	0	0	852	2,032	107,182
1992	10,427	0	17,197	72	0	519	9,304	219,524
1993	0	0	0	0	0	439	10,000	96,121
1994	0	0	0	14,634	0	785	819	192,979
1995	0	0	0	7,495	0	411	0	108,758
1996	0	0	0	2,153	0	4,150	10,947	148,083
1997	0	0	0	0	0	5,250	49,418	150,000
1998	0	0	0	0	0	5,250	49,418	195,000
1999	0	0	0	0	0	4,150	49,418	229,000
2000	0	0	0	0	0	1,950	49,418	255,000
2001	0	0	0	0	0	5,800	50,800	471,900
2002	0	0	0	0	0	5,800	50,800	471,900
2003	0	0	0	0	0	5,800	50,800	471,900
2004	0	0	0	0	0	5,800	50,800	471,900
2005	0	0	0	0	0	5,800	50,800	471,900
2006	0	0	0	0	0	5,800	50,800	471,900
2007	0	0	0	0	0	5,800	50,800	471,900
2008	0	0	0	0	0	5,800	50,800	471,900
2009	0	0	0	0	0	5,800	50,800	471,900
2010	0	0	0	0	0	5,800	50,800	471,900
2011	0	0	0	0	0	5,800	50,800	471,900
2012	0	0	0	0	0	5,800	50,800	471,900
2013	0	0	0	0	0	5,800	50,800	471,900
2014	0	0	0	0	0	5,800	50,800	471,900
2015	0	0	0	0	0	5,800	50,800	471,900
2016	0	0	0	0	0	5,800	50,800	471,900
2017	0	0	0	0	0	5,800	50,800	471,900
2018	0	0	0	0	0	5,800	50,800	471,900
2019	0	0	0	0	0	5,800	50,800	471,900
2020	0	0	0	0	0	5,800	50,800	471,900
2021	0	0	0	0	0	5,800	50,800	471,900
2022	0	0	0	0	0	5,800	50,800	471,900
2023	0	0	0	0	0	5,800	50,800	471,900
2024	0	0	0	0	0	5,800	50,800	471,900
2025	0	0	0	0	0	5,800	50,800	471,900
2026	0	0	0	0	0	5,800	50,800	471,900
2027	0	0	0	0	0	5,800	50,800	471,900
2028	0	0	0	0	0	5,800	50,800	471,900
2029	0	0	0	0	0	5,800	50,800	471,900
2030	0	0	0	0	0	5,800	50,800	471,900
2031	0	0	0	0	0	5,800	50,800	471,900
2032	0	0	0	0	0	5,800	50,800	471,900
2033	0	0	0	0	0	5,800	50,800	471,900
2034	0	0	0	0	0	5,800	50,800	471,900
2035	0	0	0	0	0	5,800	50,800	471,900
TOTAL	251,189	313	402,027	46,957	272	250,422	2,008,774	22,031,047

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)							
	Coastal Branch							
	Reach 26A					Reach 28G	Reach 28H	Reach 28J
Calendar Year	SBVMWD (g (86)	SGVMWD (87)	SGPWA (88)	CVWD (f (89)	DWA (f (90)	MWDSC (91)	MWDSC (92)	MWDSC (93)
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	1,275	0	0	0	0	0	0	0
1973	32,426	0	0	0	0	18,942	0	0
1974	16,605	612	0	0	0	0	0	0
1975	13,865	5,450	0	0	0	0	0	251
1976	12,273	6,071	0	0	0	0	55	2,000
1977	24,833	8,996	0	0	0	0	43	2,442
1978	4,055	7,771	0	0	0	0	48	64,054
1979	18	290	0	0	0	0	1,290	94,353
1980	0	1,085	0	0	0	0	3,013	91,532
1981	16,021	3,619	0	0	0	0	4,365	149,405
1982	8,409	12,599	0	0	0	0	3,961	155,629
1983	5,994	734	0	0	0	0	6,645	41,616
1984	5,556	7,656	0	0	0	0	109,743	5,672
1985	7,390	5,028	0	0	0	0	182,781	6,538
1986	6,421	9,454	0	0	0	0	131,439	30,071
1987	8,751	10,630	0	0	0	0	144,743	26,315
1988	12,637	8,948	0	0	0	0	199,641	22,209
1989	20,782	12,839	0	0	0	0	247,430	51,462
1990	18,831	16,649	0	0	0	0	257,796	36,060
1991	3,661	5,399	0	0	0	0	38,832	5,958
1992	3,358	7,908	0	0	0	0	85,341	12,223
1993	4,361	14,397	0	23,100	38,100	0	63,887	4,712
1994	9,135	15,230	0	14,102	23,257	0	134,262	4,725
1995	696	12,922	0	23,100	38,100	0	116,672	20,730
1996	27,000	16,000	0	62,219	102,622	0	126,987	6,068
1997	64,000	8,000	0	23,100	38,100	0	142,000	4,800
1998	56,000	9,000	2,000	23,100	38,100	0	264,000	4,800
1999	58,000	9,000	3,000	23,100	38,100	0	376,000	4,800
2000	59,000	9,000	4,000	23,100	38,100	0	504,000	4,800
2001	60,000	28,800	4,000	23,100	38,100	0	396,900	34,800
2002	60,000	28,800	5,000	23,100	38,100	0	396,900	34,800
2003	60,000	28,800	6,000	23,100	38,100	0	396,900	34,800
2004	60,000	28,800	6,500	23,100	38,100	0	396,900	34,800
2005	90,000	28,800	7,000	23,100	38,100	0	396,900	34,800
2006	90,000	28,800	7,500	23,100	38,100	0	396,900	34,800
2007	90,000	28,800	8,450	23,100	38,100	0	396,900	34,800
2008	90,000	28,800	8,450	23,100	38,100	0	396,900	34,800
2009	90,000	28,800	8,450	23,100	38,100	0	396,900	34,800
2010	102,600	28,800	10,550	23,100	38,100	0	396,900	34,800
2011	102,600	28,800	10,550	23,100	38,100	0	396,900	34,800
2012	102,600	28,800	10,550	23,100	38,100	0	396,900	34,800
2013	102,600	28,800	10,550	23,100	38,100	0	396,900	34,800
2014	102,600	28,800	10,550	23,100	38,100	0	396,900	34,800
2015	102,600	28,800	13,550	23,100	38,100	0	396,900	34,800
2016	102,600	28,800	13,550	23,100	38,100	0	396,900	34,800
2017	102,600	28,800	13,550	23,100	38,100	0	396,900	34,800
2018	102,600	28,800	13,550	23,100	38,100	0	396,900	34,800
2019	102,600	28,800	13,550	23,100	38,100	0	396,900	34,800
2020	102,600	28,800	16,650	23,100	38,100	0	396,900	34,800
2021	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2022	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2023	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2024	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2025	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2026	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2027	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2028	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2029	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2030	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2031	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2032	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2033	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2034	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
2035	102,600	28,800	17,300	23,100	38,100	0	396,900	34,800
TOTAL	3,858,953	1,233,287	467,000	1,023,421	1,687,979	18,942	17,036,474	2,071,225

g) Includes 1,650 AF recaptured from ground water storage in 1982, 10,000 AF in 1987, and 8,749 AF in 1988. This water was stored under DWR's Ground Water Demonstration Program.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)							
	Santa Ana Division (continued)		West Branch					
	Reach 29F	Reach 29H	Reach 30				Reach 31A	
Calendar Year	AVEKWA (94)	VCFCD (95)	MWDSC (h (96)	VCFCD (97)	CLWA (98)	SBCFC&WCD (99)	KCWA (M&I) (100)	KCWA (Ag) (101)
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	71,657
1969	0	0	0	0	0	0	0	52,094
1970	0	0	0	0	0	0	0	71,910
1971	0	0	0	0	0	0	0	98,481
1972	53	0	71,938	0	0	0	0	107,850
1973	20	0	155,297	0	0	0	0	69,227
1974	36	0	209,136	0	0	0	0	68,474
1975	26	0	374,280	0	0	0	0	74,516
1976	24	0	420,684	0	0	0	0	78,358
1977	0	0	122,447	0	0	0	0	35,504
1978	0	0	171,139	0	0	0	0	81,242
1979	0	0	145,591	0	7	0	0	104,017
1980	0	0	164,721	0	1,210	0	0	97,497
1981	0	0	277,503	0	5,761	0	0	97,054
1982	0	0	351,362	0	9,516	0	0	83,076
1983	0	0	157,519	0	9,476	0	0	87,859
1984	0	0	260,624	0	11,477	0	0	119,098
1985	0	0	390,696	0	12,401	0	0	110,124
1986	0	0	379,275	0	13,928	0	0	118,298
1987	0	0	417,285	0	16,167	0	0	116,259
1988	0	0	488,265	0	18,904	0	0	109,435
1989	0	0	589,962	0	21,719	0	0	102,156
1990	0	4,836	764,380	0	22,139	0	0	103,362
1991	0	988	257,835	0	3,846	1,240	0	780
1992	0	0	420,849	0	14,812	0	0	73,748
1993	6	0	437,470	0	13,787	0	0	90,764
1994	0	0	475,900	0	14,919	0	200	77,536
1995	0	0	139,882	0	17,747	0	0	85,050
1996	0	0	308,790	0	5,400	0	0	89,380
1997	0	5,000	367,000	5,000	29,100	0	0	89,000
1998	0	5,000	400,000	5,000	31,100	0	0	89,000
1999	0	5,000	404,000	5,000	33,100	0	0	89,000
2000	0	5,000	665,000	5,000	35,100	0	0	89,000
2001	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2002	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2003	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2004	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2005	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2006	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2007	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2008	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2009	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2010	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2011	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2012	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2013	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2014	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2015	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2016	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2017	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2018	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2019	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2020	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2021	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2022	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2023	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2024	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2025	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2026	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2027	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2028	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2029	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2030	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2031	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2032	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2033	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2034	0	5,000	1,107,900	15,000	41,500	0	0	89,000
2035	0	5,000	1,107,900	15,000	41,500	0	0	89,000
TOTAL	165	200,824	48,565,330	545,000	1,794,116	1,240	200	5,945,806

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)

Calendar Year	California Aqueduct (continued)					Total (107)	Grand Total (108)
	Coastal Branch						
	Reach 31A	Reach 33A	Reach 34	Reach 35			
	CLWA (102)	SLOCFC &WCD (103)	SLOCFC &WCD (104)	SLOCFC &WCD (105)	SBCFC &WCD (106)		
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	1,974,569	2,121,060
1988	11,534	0	0	0	0	2,213,089	2,375,984
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	489,492	548,523
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	1,866,346
1995	9,486	0	0	0	0	1,922,379	2,024,774
1996	12,700	440	432	0	3,851	2,460,890	2,587,077
1997	12,700	0	2,338	2,392	42,986	2,286,337	2,536,402
1998	12,700	0	2,338	2,392	42,986	2,486,344	2,737,154
1999	12,700	0	2,338	2,392	42,986	2,604,545	2,856,895
2000	12,700	0	2,338	2,392	41,986	2,988,829	3,237,029
2001	12,700	10,000	5,000	10,000	45,486	3,867,086	4,110,408
2002	12,700	10,000	5,000	10,000	45,486	3,868,086	4,112,443
2003	12,700	10,000	5,000	10,000	45,486	3,869,086	4,114,576
2004	12,700	10,000	5,000	10,000	45,486	3,869,586	4,116,202
2005	12,700	10,000	5,000	10,000	45,486	3,900,086	4,147,413
2006	12,700	10,000	5,000	10,000	45,486	3,900,586	4,148,476
2007	12,700	10,000	5,000	10,000	45,486	3,901,536	4,150,090
2008	12,700	10,000	5,000	10,000	45,486	3,901,536	4,150,856
2009	12,700	10,000	5,000	10,000	45,486	3,901,536	4,151,548
2010	12,700	10,000	5,000	10,000	45,486	3,916,236	4,166,919
2011	12,700	10,000	5,000	10,000	45,486	3,916,236	4,167,692
2012	12,700	10,000	5,000	10,000	45,486	3,916,236	4,168,368
2013	12,700	10,000	5,000	10,000	45,486	3,916,236	4,169,146
2014	12,700	10,000	5,000	10,000	45,486	3,916,236	4,169,885
2015	12,700	10,000	5,000	10,000	45,486	3,919,236	4,173,651
2016	12,700	10,000	5,000	10,000	45,486	3,919,236	4,174,316
2017	12,700	10,000	5,000	10,000	45,486	3,919,236	4,174,978
2018	12,700	10,000	5,000	10,000	45,486	3,919,236	4,175,636
2019	12,700	10,000	5,000	10,000	45,486	3,919,236	4,176,236
2020	12,700	10,000	5,000	10,000	45,486	3,922,336	4,179,936
2021	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2022	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2023	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2024	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2025	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2026	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2027	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2028	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2029	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2030	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2031	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2032	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2033	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2034	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
2035	12,700	10,000	5,000	10,000	45,486	3,922,986	4,180,686
TOTAL	804,769	350,440	184,784	359,568	1,766,805	187,116,397	200,628,510

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	North Bay Area			South Bay Area (b				Central Coastal Area		
	Napa County FC&WCD (a (1)	Solano County 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	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	3,519	10,609	12,379	88,000	110,988	0	0	0
1987	7,693	1,550	7,693	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	30,990	37,782	20,542	22,911	57,115	100,568	0	0	0
1995	5,182	21,345	26,527	30,113	16,691	28,756	75,560	0	0	0
1996	10,425	45,175	55,600	12,400	30,866	26,021	69,287	872	3,851	4,723
1997	11,065	49,650	60,715	46,000	42,000	100,000	188,000	4,730	42,986	47,716
1998	11,710	49,700	61,410	46,000	42,000	100,000	188,000	4,730	42,986	47,716
1999	12,330	50,570	62,900	46,000	42,000	100,000	188,000	4,730	42,986	47,716
2000	13,050	45,640	58,690	46,000	42,000	100,000	188,000	4,730	41,986	46,716
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	952,962	1,852,427	2,805,389	2,233,309	2,146,663	6,222,676	10,602,648	894,792	1,768,045	2,662,837

a) For the period 1968 through 1987, deliveries are non-Project water pumped through an interim facility.
b) For the period June 1962 through November 1967, deliveries were supplied by non-Project water.

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	San Joaquin Valley Area								
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Kern County Water Agency			County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
			Municipal and Industrial (13)	Agricultural (14)	Total (15)				
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	59,686	1,631	125,992	1,025,579	1,151,571	4,000	5,169	98,369	1,320,426
1996	49,925	1,868	136,907	1,001,393	1,138,300	4,000	5,700	259,907	1,459,700
1997	53,370	3,000	119,700	874,360	994,060	4,000	5,700	118,500	1,178,630
1998	53,370	3,000	119,700	874,360	994,060	4,000	5,700	118,500	1,178,630
1999	53,370	3,000	119,700	874,360	994,060	4,000	5,700	118,500	1,178,630
2000	53,370	3,000	119,700	874,360	994,060	4,000	5,700	118,500	1,178,630
2001	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2002	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2003	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2004	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2005	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2006	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2007	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2008	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2009	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2010	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2011	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2012	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2013	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2014	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2015	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2016	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2017	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2018	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2019	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2020	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2021	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2022	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2023	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2024	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2025	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2026	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2027	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2028	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2029	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2030	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2031	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2032	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2033	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2034	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2035	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
TOTAL	3,362,331	183,233	6,933,593	55,678,802	62,612,395	223,822	349,717	6,835,168	73,566,666

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	8,751	10,630
1988	34,079	30,438	20,652	2,006	34,000	419	9	1,770	12,637	8,948
1989	45,280	36,364	21,873	2,170	36,500	971	200	9,009	20,782	12,839
1990	47,206	28,579	23,100	1,827	38,100	1,747	0	8,608	18,831	16,649
1991	9,568	4,562	6,930	852	11,430	522	3,423	3,914	3,661	5,399
1992	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	411	38,100	480	8,722	6,961	696	12,922
1996	58,822	18,100	62,219	4,150	102,622	2,300	14,600	11,733	27,000	16,000
1997	60,541	41,800	23,100	5,250	38,100	2,300	50,800	17,300	64,000	8,000
1998	63,548	43,800	23,100	5,250	38,100	2,300	50,800	17,300	56,000	9,000
1999	67,849	45,800	23,100	4,150	38,100	2,300	50,800	17,300	58,000	9,000
2000	71,333	47,800	23,100	1,950	38,100	2,300	50,800	17,300	59,000	9,000
2001	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	60,000	28,800
2002	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	60,000	28,800
2003	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	60,000	28,800
2004	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	60,000	28,800
2005	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	90,000	28,800
2006	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	90,000	28,800
2007	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	90,000	28,800
2008	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	90,000	28,800
2009	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	90,000	28,800
2010	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2011	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2012	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2013	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2014	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2015	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2016	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2017	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2018	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2019	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2020	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2021	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2022	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2023	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2024	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2025	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2026	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2027	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2028	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2029	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2030	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2031	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2032	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2033	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2034	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2035	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
TOTAL	5,996,349	2,606,080	1,274,610	250,422	2,090,006	103,554	2,069,872	746,942	3,858,953	1,233,287

c) Devil's Den Water District merged with Castaic Lake Water Agency effective January 1, 1992.

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1962	0	0	0	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	0	0	0	56,763
1968	0	0	0	7,382	0	0	0	0	0	294,457
1969	0	0	0	9,970	0	0	0	0	0	268,104
1970	0	0	0	11,739	0	0	70	70	0	369,459
1971	0	0	0	12,490	0	192	64	256	0	654,442
1972	0	71,938	0	88,028	0	186	505	691	0	1,037,770
1973	0	159,883	0	217,226	0	53	679	732	0	737,532
1974	0	277,717	0	323,334	0	127	648	775	0	878,947
1975	0	526,491	0	583,919	0	253	405	658	0	1,230,830
1976	0	618,451	0	697,468	0	527	382	909	0	1,380,124
1977	0	189,755	0	241,161	0	706	303	1,009	0	582,381
1978	0	507,565	0	601,691	0	579	278	857	0	1,458,733
1979	0	477,074	0	587,476	0	302	329	631	0	1,666,457
1980	0	531,727	0	653,625	0	267	295	562	0	1,530,256
1981	0	795,846	0	951,182	0	221	355	576	0	1,918,563
1982	0	691,192	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	853,143	88	459	452	999	0	2,121,607
1988	0	902,564	0	1,047,522	303	385	523	1,211	0	2,376,672
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	442,696	265	328	420	1,013	0	549,116
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	1,035	329	492	1,856	0	1,867,710
1995	0	436,042	0	601,953	910	203	308	1,421	0	2,025,887
1996	0	678,921	0	996,467	3,150	800	1,300	5,250	0	2,591,027
1997	0	738,800	10,000	1,059,991	3,150	758	1,350	5,258	0	2,540,310
1998	2,000	938,800	10,000	1,259,998	3,150	787	1,400	5,337	0	2,741,091
1999	3,000	1,048,800	10,000	1,378,199	3,150	800	1,450	5,400	0	2,860,845
2000	4,000	1,428,800	10,000	1,763,483	3,150	800	1,510	5,460	0	3,240,979
2001	4,000	2,011,500	20,000	2,454,300	9,600	27,500	1,577	38,677	0	4,147,508
2002	5,000	2,011,500	20,000	2,455,300	9,600	27,500	1,632	38,732	0	4,149,543
2003	6,000	2,011,500	20,000	2,456,300	9,600	27,500	1,690	38,790	0	4,151,676
2004	6,500	2,011,500	20,000	2,456,800	9,600	27,500	1,766	38,866	0	4,153,302
2005	7,000	2,011,500	20,000	2,487,300	9,600	27,500	1,827	38,927	0	4,184,513
2006	7,500	2,011,500	20,000	2,487,800	9,600	27,500	1,890	38,990	0	4,185,576
2007	8,450	2,011,500	20,000	2,488,750	9,600	27,500	1,954	39,054	0	4,187,190
2008	8,450	2,011,500	20,000	2,488,750	9,600	27,500	2,020	39,120	0	4,187,956
2009	8,450	2,011,500	20,000	2,488,750	9,600	27,500	2,112	39,212	0	4,188,648
2010	10,550	2,011,500	20,000	2,503,450	9,600	27,500	2,183	39,283	0	4,204,019
2011	10,550	2,011,500	20,000	2,503,450	9,600	27,500	2,256	39,356	0	4,204,792
2012	10,550	2,011,500	20,000	2,503,450	9,600	27,500	2,332	39,432	0	4,205,468
2013	10,550	2,011,500	20,000	2,503,450	9,600	27,500	2,410	39,510	0	4,206,246
2014	10,550	2,011,500	20,000	2,503,450	9,600	27,500	2,449	39,549	0	4,206,985
2015	13,550	2,011,500	20,000	2,506,450	9,600	27,500	2,515	39,615	0	4,210,751
2016	13,550	2,011,500	20,000	2,506,450	9,600	27,500	2,580	39,680	0	4,211,416
2017	13,550	2,011,500	20,000	2,506,450	9,600	27,500	2,642	39,742	0	4,212,078
2018	13,550	2,011,500	20,000	2,506,450	9,600	27,500	2,700	39,800	0	4,212,736
2019	13,550	2,011,500	20,000	2,506,450	9,600	27,500	2,700	39,800	0	4,213,336
2020	16,650	2,011,500	20,000	2,509,550	9,600	27,500	2,700	39,800	0	4,217,036
2021	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2022	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2023	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2024	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2025	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2026	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2027	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2028	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2029	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2030	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2031	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2032	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2033	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2034	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2035	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
TOTAL	467,000	89,443,795	745,824	110,886,694	357,134	974,072	101,326	1,432,532	0	201,956,766

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	North Bay Aqueduct											
	Barker Slough Pumping Plant				Cordelia Pumping Plant Solano County Water Agency				Cordelia Pumping Plant Napa County FC&WCD			
	Initial Fill Water (1)	Operational Losses (2)	Water Supply Delivery (3)	Total (4)	Initial Fill Water (5)	Operational Losses (6)	Water Supply Delivery (7)	Total (8)	Initial Fill Water (9)	Operational Losses (10)	Water Supply Delivery (a (11)	Total (12)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	24	(10)	1,214	1,228
1969	0	0	0	0	0	0	0	0	0	2	2,687	2,689
1970	0	0	0	0	0	0	0	0	0	18	3,618	3,636
1971	0	0	0	0	0	0	0	0	0	4	2,521	2,525
1972	0	0	0	0	0	0	0	0	0	(10)	3,647	3,637
1973	0	0	0	0	0	0	0	0	0	1	3,792	3,793
1974	0	0	0	0	0	0	0	0	0	10	4,870	4,880
1975	0	0	0	0	0	0	0	0	0	10	6,840	6,850
1976	0	0	0	0	0	0	0	0	0	4	7,122	7,126
1977	0	0	0	0	0	0	0	0	0	2	8,226	8,228
1978	0	0	0	0	0	0	0	0	0	(6)	6,034	6,028
1979	0	0	0	0	0	0	0	0	0	1	6,561	6,562
1980	0	0	0	0	0	0	0	0	0	(3)	6,707	6,704
1981	0	0	0	0	0	0	0	0	0	8	9,001	9,009
1982	0	0	0	0	0	0	0	0	0	(8)	1,213	1,205
1983	0	0	0	0	0	0	0	0	0	(12)	2,287	2,275
1984	0	0	0	0	0	0	0	0	0	(15)	2,923	2,908
1985	0	0	0	0	0	0	0	0	0	13	4,039	4,052
1986	0	0	0	0	0	0	0	0	0	(4)	3,515	3,511
1987	0	0	0	0	0	0	0	0	0	0	7,693	7,693
1988	0	273	15,118	15,391	0	(6)	9,725	9,719	0	(4)	5,392	5,388
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	124	3,855	3,979	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	786	32,509	33,295	0	0	15,376	15,376	0	0	6,792	6,792
1995	0	907	26,527	27,434	0	0	15,893	15,893	0	0	5,182	5,182
1996	0	51	55,600	55,651	0	5	24,281	24,286	0	5	10,425	10,430
1997	0	51	60,715	60,766	0	5	28,550	28,555	0	5	11,065	11,070
1998	0	51	61,410	61,461	0	5	28,550	28,555	0	5	11,710	11,715
1999	0	51	62,900	62,951	0	5	29,370	29,375	0	5	12,330	12,335
2000	0	51	58,690	58,741	0	5	27,740	27,745	0	5	13,050	13,055
2001	0	51	53,745	53,796	0	5	18,880	18,885	0	5	13,665	13,670
2002	0	51	54,725	54,776	0	5	19,290	19,295	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	58,600	58,651	0	5	20,100	20,105	0	5	17,000	17,005
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	19,724	19,729	0	5	23,100	23,105
2018	0	51	65,700	65,751	0	5	19,724	19,729	0	5	23,700	23,705
2019	0	51	66,300	66,351	0	5	19,724	19,729	0	5	24,300	24,305
2020	0	51	66,900	66,951	0	5	19,724	19,729	0	5	24,900	24,905
2021	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2022	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2023	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2024	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2025	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2026	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2027	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2028	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2029	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2030	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2031	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2032	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2033	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2034	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2035	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005

a) For the period 1968 through 1987, deliveries are non-SWP water pumped through an interim facility.

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

	South Bay Aqueduct						California Aqueduct							
							North San Joaquin Division							
	South Bay Pumping Plant						Banks Pumping Plant							
							Transportation Water							
				Deliveries						Deliveries				
Calendar Year	Initial Fill Water (13)	Operational Losses (14)	Reservoir Storage Changes (15)	Water Supply (b (16)	Recreation (17)	Total (18)	Initial Fill Water (19)	Operational Losses (20)	Reservoir Storage Changes (21)	Water Supply (22)	Recreation (23)	Total (24)	Conservation Water (25)	Total (26)
1961	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	9	272	0	8,906	0	9,187	0	0	0	0	0	0	0	0
1963	71	185	0	12,645	0	12,901	0	0	0	0	0	0	0	0
1964	171	152	0	20,911	0	21,234	0	0	0	0	0	0	0	0
1965	93	729	0	34,026	0	34,848	0	0	0	0	0	0	0	0
1966	0	1,746	0	54,913	0	56,659	0	0	0	0	0	0	0	0
1967	0	1,677	0	56,763	0	58,440	5,746	1,183	0	11,538	0	18,467	2,957	21,424
1968	0	1,847	0	101,055	0	102,902	11,079	74,464	0	293,243	0	378,786	531,275	910,061
1969	3,449	2,668	0	69,712	0	75,829	7,336	44,287	0	265,417	0	317,040	531,185	848,225
1970	16,279	1,086	(5,355)	89,560	0	101,570	23,947	20,767	(5,355)	365,771	0	405,130	(12,995)	392,135
1971	0	1,815	8,854	98,584	0	109,253	23,207	(10,754)	8,854	651,665	8	672,980	7,708	680,688
1972	0	3,557	2,273	138,426	0	144,256	145,066	9,057	(4,285)	1,033,432	6,489	1,189,759	48,300	1,238,059
1973	0	(33)	(1,510)	94,078	0	92,535	214,941	(4,951)	2,902	733,008	1,155	947,055	55,846	1,002,901
1974	0	1,287	(10,056)	89,318	0	80,549	247,894	(11,526)	(32,510)	873,302	2,118	1,079,278	54,683	1,133,961
1975	0	320	8,550	93,604	0	102,474	110,149	(8,092)	16,101	1,223,332	3,377	1,344,867	(102,625)	1,242,242
1976	0	2,431	1,391	126,431	141	130,394	67,834	5,443	(244,124)	1,372,093	1,745	1,202,991	(442,348)	760,643
1977	0	2,866	2,685	107,704	112	113,367	0	39,897	(157,543)	573,146	1,111	456,611	(13,507)	443,104
1978	0	2,165	(11,249)	112,574	126	103,616	67,457	(36,898)	35,129	1,451,842	1,177	1,518,707	752,075	2,270,782
1979	0	2,401	1,069	122,190	89	125,749	17,397	60,958	(32,307)	1,659,265	1,398	1,706,711	(112,053)	1,594,658
1980	0	1,758	(6,563)	115,824	123	111,142	3,159	58,484	(275,538)	1,529,187	2,131	1,317,423	186,601	1,504,024
1981	0	2,627	13,742	129,507	121	145,997	46,060	85,350	40,536	1,908,986	4,974	2,085,906	(931,878)	1,154,028
1982	0	2,344	(23,928)	107,439	129	85,984	5,979	61,556	99,897	1,743,145	4,646	1,915,223	347,983	2,263,206
1983	0	2,151	(22,886)	94,656	132	74,053	6,071	47,022	(310,477)	1,184,282	7,853	934,751	835,771	1,770,522
1984	0	2,088	8,442	98,122	158	108,810	38,649	97,143	(108,548)	1,587,936	5,874	1,621,054	21,875	1,642,929
1985	0	2,817	(1,607)	122,088	152	123,450	0	110,469	137,783	1,985,632	5,452	2,239,336	(110,569)	2,128,767
1986	0	2,217	319	110,988	130	113,654	0	82,958	37,865	1,993,278	3,865	2,117,966	205,399	2,323,365
1987	0	2,625	(584)	136,796	137	138,974	0	89,721	(19,167)	2,118,867	7,672	2,197,093	(458,725)	1,738,368
1988	0	2,884	724	147,255	142	151,005	0	134,229	(339,023)	2,360,044	4,889	2,160,139	(301,121)	1,859,018
1989	0	2,673	3,296	142,269	152	148,390	0	170,723	317,292	2,829,107	8,135	3,325,257	409,832	3,735,089
1990	0	894	1,041	156,537	168	158,640	0	136,842	(423,258)	2,554,658	9,262	2,277,504	(368,904)	1,908,600
1991	0	2,637	(4,532)	50,259	150	48,514	0	108,791	283,937	539,751	4,912	937,391	215,999	1,153,390
1992	0	2,925	927	76,661	147	80,660	0	98,462	(56,244)	1,391,008	2,605	1,435,831	(157,239)	1,278,592
1993	0	1,940	(20,051)	105,971	143	88,003	0	149,372	(273,652)	2,279,186	2,609	2,157,515	849,249	3,006,764
1994	0	2,722	811	100,240	168	103,941	0	169,860	(116,788)	1,827,841	3,788	1,884,701	(417,876)	1,466,825
1995	0	916	(737)	75,560	144	75,883	0	190,922	117,656	2,002,026	2,531	2,313,135	247,669	2,560,804
1996	0	3,288	0	69,287	400	72,975	0	109,448	(6,608)	2,530,177	8,849	2,641,866	171,608	2,813,474
1997	0	3,163	0	188,000	400	191,563	0	109,193	74,959	2,474,337	9,405	2,667,894	(106,998)	2,560,896
1998	0	3,145	0	188,000	400	191,545	0	109,147	(3,820)	2,674,344	9,475	2,789,146	(144,745)	2,644,401
1999	0	3,254	0	188,000	400	191,654	0	111,106	(14,506)	2,792,545	9,515	2,898,660	(112,203)	2,786,457
2000	0	3,338	0	188,000	400	191,738	0	110,116	9,137	3,176,829	9,575	3,305,657	26,113	3,331,770
2001	0	3,262	0	188,000	400	191,662	0	108,724	(17,374)	4,055,086	9,575	4,156,011	(5,385)	4,150,626
2002	0	3,262	0	188,000	400	191,662	0	109,135	16,325	4,056,086	9,575	4,191,121	1,265	4,192,386
2003	0	3,262	0	188,000	400	191,662	0	109,265	580	4,057,086	9,575	4,176,506	3,847	4,180,353
2004	0	3,262	0	188,000	400	191,662	0	109,266	(2,058)	4,057,586	9,575	4,174,369	17,495	4,191,864
2005	0	3,262	0	188,000	400	191,662	0	109,234	(961)	4,088,086	9,575	4,205,934	(14,057)	4,191,877
2006	0	3,262	0	188,000	400	191,662	0	109,168	304	4,088,586	9,575	4,207,633	8,729	4,216,362
2007	0	3,262	0	188,000	400	191,662	0	109,291	1,178	4,089,536	9,575	4,209,580	25,881	4,235,461
2008	0	3,262	0	188,000	400	191,662	0	109,111	1,491	4,089,536	9,575	4,209,713	(9,948)	4,199,765
2009	0	3,262	0	188,000	400	191,662	0	109,197	1,308	4,089,536	9,575	4,209,616	5,273	4,214,889
2010	0	3,262	0	188,000	400	191,662	0	109,209	(11,477)	4,104,236	9,575	4,211,543	37,601	4,249,144
2011	0	3,262	0	188,000	400	191,662	0	109,190	(2,635)	4,104,236	9,575	4,220,366	21,222	4,241,588
2012	0	3,262	0	188,000	400	191,662	0	109,145	(697)	4,104,236	9,575	4,222,259	(10,746)	4,211,513
2013	0	3,262	0	188,000	400	191,662	0	109,141	10,049	4,104,236	9,575	4,233,001	(28,080)	4,204,921
2014	0	3,262	0	188,000	400	191,662	0	109,193	(6,006)	4,104,236	9,414	4,216,837	25,498	4,242,335
2015	0	3,262	0	188,000	400	191,662	0	109,102	9,104	4,107,236	9,575	4,235,017	(14,849)	4,220,168
2016	0	3,262	0	188,000	400	191,662	0	109,174	(10,227)	4,107,236	9,575	4,215,758	25,088	4,240,846
2017	0	3,262	0	188,000	400	191,662	0	109,151	(402)	4,107,236	9,575	4,225,560	7,214	4,232,774
2018	0	3,262	0	188,000	400	191,662	0	109,163	(1,047)	4,107,236	9,575	4,224,927	4,619	4,229,546
2019	0	3,262	0	188,000	400	191,662	0	109,128	(1,748)	4,107,236	9,575	4,224,191	8,776	4,232,967
2020	0	3,262	0	188,000	400	191,662	0	109,141	4,418	4,110,336	9,575	4,233,470	956	4,234,426
2021	0	3,262	0	188,000	400	191,662	0	109,160	61	4,110,986	9,575	4,229,782	23,887	4,253,669
2022	0	3,262	0	188,000	400	191,662	0	109,082	(1,704)	4,110,986	9,575	4,227,939	(12,137)	4,215,802
2023	0	3,262	0	188,000	400	191,662	0	109,141	1,770	4,110,986	9,575	4,231,472	11,640	4,243,112
2024	0	3,262	0	188,000	400	191,662	0	109,089	1,944	4,110,986	9,575	4,231,594	3,229	4,234,823
2025	0	3,262	0	188,000	400	191,662	0	109,161	(1,983)	4,110,986	9,575	4,227,739	22,995	4,250,734
2026	0	3,262	0	188,000	400	191,662	0	109,089	1,979	4,110,986	9,575	4,231,629	(12,224)	4,219,405
2027	0	3,262	0	188,000	400	191,662	0	109,159	(3,488)	4,110,986	9,575	4,226,232	18,796	4,245,028
2028	0	3,262	0	188,000	400	191,662	0	109,113	1,438	4,110,986	9,575	4,231,112	(7,997)	4,223,115
2029	0	3,262	0	188,000	400	191,662	0	109,109	757	4,110,986	9,575	4,230,427	18,798	4,249,225
2030	0	3,262	0	188,000	400	191,662	0	109,064	6,809	4,110,986	9,575	4,236,434	(7,707)	4,228,727
2031	0	3,262	0	188,000	400	191,662	0	109,174	3,679	4,110,986	9,575	4,233,414	(27,430)	4,205,984
2032	0	3,262	0	188,000	400	191,662	0	109,057	(1,131)	4,110,986	9,575	4,228,487	12,775	4,241,262
2033	0	3,262	0	188,000	400	191,662	0	109,122	2,492	4,110,986	9,575	4,232,175	7,194	4,239,369
2034	0	3,262	0	188,000	400	191,662	0	109,135	(1,879)	4,110,986	9,575	4,227,817	11,134	4,238,951
2035	0	3,262	0	188,000	400	191,662	0	109,052	4,558	4,110,986	9,575	4,234,171	113,075	4,347,246

b) For the period June 1962 through November 1967, deliveries were supplied by non-SWP water.

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	San Luis Division						South San Joaquin Division					
	Dos Amigos Pumping Plant						Buena Vista Pumping Plant					
				Deliveries						Deliveries		
	Initial Fill Water (27)	Operational Losses (28)	Reservoir Storage Changes (29)	Water Supply (30)	Recreation (31)	Total (32)	Initial Fill Water (33)	Operational Losses (34)	Reservoir Storage Changes (35)	Water Supply (36)	Recreation (37)	Total (38)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	11,079	25,126	0	189,104	0	225,309	0	0	0	0	0	0
1969	3,887	9,922	0	192,689	0	206,498	0	0	0	0	0	0
1970	7,668	1,901	0	270,300	0	279,869	4,779	1,012	0	3	0	5,794
1971	23,207	(12,030)	0	545,869	0	557,046	7,853	8,399	0	101,512	0	117,764
1972	145,066	(6,635)	(6,558)	886,840	6,481	1,025,194	100,274	20,044	(6,558)	223,626	6,481	343,867
1973	214,941	(6,778)	1,329	635,716	1,147	846,355	204,638	35,695	1,329	311,096	1,147	553,905
1974	247,894	(16,765)	(15,295)	780,513	2,108	998,455	237,554	19,672	(15,295)	388,949	2,108	632,988
1975	110,149	(12,144)	(693)	1,126,152	3,358	1,226,822	103,352	26,342	(693)	672,531	3,358	804,890
1976	67,834	(456)	(152,171)	1,241,550	1,581	1,158,338	61,122	29,428	(152,171)	785,055	1,581	725,015
1977	0	26,359	(116,219)	463,970	737	374,847	0	25,173	(116,219)	271,944	560	181,458
1978	67,457	1,905	79,308	1,335,362	680	1,484,712	65,027	17,751	121,904	762,043	674	967,399
1979	17,397	33,884	(51,299)	1,530,926	685	1,531,593	12,302	46,157	(51,299)	737,714	502	745,376
1980	3,159	34,391	(272,825)	1,407,663	1,514	1,173,902	0	49,025	(134,009)	778,059	1,262	694,337
1981	46,060	36,962	23,359	1,775,179	4,348	1,885,908	0	38,942	23,359	1,077,322	4,112	1,143,735
1982	5,979	57,146	116,086	1,631,868	4,205	1,815,284	0	29,059	117,174	990,863	4,045	1,141,141
1983	6,071	63,583	(101,155)	1,085,804	7,475	1,061,778	0	40,205	(101,155)	593,920	7,291	540,261
1984	38,649	109,263	(112,744)	1,484,114	5,391	1,524,673	0	38,487	(114,984)	781,955	5,244	710,702
1985	0	86,772	138,898	1,858,111	4,936	2,088,717	0	42,838	139,689	992,606	4,804	1,179,937
1986	0	49,378	37,546	1,877,183	3,426	1,967,533	0	45,343	37,546	1,014,294	3,285	1,100,468
1987	0	63,289	(23,086)	1,976,446	7,121	2,023,770	0	28,829	(22,959)	1,017,361	6,937	1,030,168
1988	0	72,680	(25,372)	2,208,377	4,490	2,260,175	0	38,804	(25,372)	1,235,447	4,360	1,253,239
1989	0	90,090	(61,544)	2,679,845	7,652	2,716,043	0	29,594	(61,544)	1,532,625	7,490	1,508,165
1990	0	115,074	(14,836)	2,394,999	8,922	2,504,159	0	46,865	(14,836)	1,769,991	8,879	1,810,899
1991	0	92,224	107,302	489,351	4,638	693,515	0	39,274	107,302	453,703	4,593	604,872
1992	0	107,084	(57,784)	1,312,108	2,079	1,363,487	0	31,178	(57,784)	917,721	1,995	893,110
1993	0	136,432	(220,400)	2,170,357	1,864	2,088,253	0	14,186	(128,226)	908,063	1,676	795,699
1994	0	157,133	(100,477)	1,724,530	3,083	1,784,269	0	38,493	(100,407)	1,106,930	2,903	1,047,919
1995	0	128,749	115,897	1,921,297	1,669	2,167,612	0	26,169	114,956	706,333	1,669	849,127
1996	0	66,553	(6,608)	2,455,190	7,210	2,522,345	0	44,796	(6,608)	1,070,156	7,010	1,115,354
1997	0	67,415	74,959	2,280,637	7,210	2,430,221	0	45,658	74,959	1,142,691	7,010	1,270,318
1998	0	67,797	(3,820)	2,480,644	7,210	2,551,831	0	46,040	(3,820)	1,342,698	7,010	1,391,928
1999	0	63,318	(14,506)	2,598,845	7,210	2,654,867	0	41,561	(14,506)	1,500,899	7,010	1,534,964
2000	0	63,096	9,137	2,983,129	7,210	3,062,572	0	41,339	9,137	1,921,183	7,010	1,978,669
2001	0	63,071	(17,374)	3,861,386	7,210	3,914,293	0	41,314	(17,374)	2,616,900	7,010	2,647,850
2002	0	63,130	16,325	3,862,386	7,210	3,949,051	0	41,373	16,325	2,617,900	7,010	2,682,608
2003	0	63,183	580	3,863,386	7,210	3,934,359	0	41,426	580	2,618,900	7,010	2,667,916
2004	0	63,183	(2,058)	3,863,886	7,210	3,932,221	0	41,426	(2,058)	2,619,400	7,010	2,665,778
2005	0	63,130	(961)	3,894,386	7,210	3,963,765	0	41,373	(961)	2,649,900	7,010	2,697,322
2006	0	63,085	304	3,894,886	7,210	3,965,485	0	41,328	304	2,650,400	7,010	2,699,042
2007	0	63,169	1,178	3,895,836	7,210	3,967,393	0	41,412	1,178	2,651,350	7,010	2,700,950
2008	0	63,137	1,491	3,895,836	7,210	3,967,674	0	41,380	1,491	2,651,350	7,010	2,701,231
2009	0	63,124	1,308	3,895,836	7,210	3,967,478	0	41,367	1,308	2,651,350	7,010	2,701,035
2010	0	63,164	(11,477)	3,910,536	7,210	3,969,433	0	41,407	(11,477)	2,666,050	7,010	2,702,990
2011	0	63,173	(2,635)	3,910,536	7,210	3,978,284	0	41,416	(2,635)	2,666,050	7,010	2,711,841
2012	0	63,167	(697)	3,910,536	7,210	3,980,216	0	41,410	(697)	2,666,050	7,010	2,713,773
2013	0	63,127	10,049	3,910,536	7,210	3,990,922	0	41,370	10,049	2,666,050	7,010	2,724,479
2014	0	63,117	(6,006)	3,910,536	7,049	3,974,696	0	41,360	(6,006)	2,666,050	6,849	2,708,253
2015	0	63,117	9,104	3,913,536	7,210	3,992,967	0	41,360	9,104	2,669,050	7,010	2,726,524
2016	0	63,151	(10,227)	3,913,536	7,210	3,973,670	0	41,394	(10,227)	2,669,050	7,010	2,707,227
2017	0	63,125	(402)	3,913,536	7,210	3,983,469	0	41,368	(402)	2,669,050	7,010	2,717,026
2018	0	63,167	(1,047)	3,913,536	7,210	3,982,866	0	41,410	(1,047)	2,669,050	7,010	2,716,423
2019	0	63,127	(1,748)	3,913,536	7,210	3,982,125	0	41,370	(1,748)	2,669,050	7,010	2,715,682
2020	0	63,196	4,418	3,916,636	7,210	3,991,460	0	41,439	4,418	2,672,150	7,010	2,725,017
2021	0	63,206	61	3,917,286	7,210	3,987,763	0	41,449	61	2,672,800	7,010	2,721,320
2022	0	63,140	(1,704)	3,917,286	7,210	3,985,932	0	41,383	(1,704)	2,672,800	7,010	2,719,489
2023	0	63,196	1,770	3,917,286	7,210	3,989,462	0	41,439	1,770	2,672,800	7,010	2,723,019
2024	0	63,179	1,944	3,917,286	7,210	3,989,619	0	41,422	1,944	2,672,800	7,010	2,723,176
2025	0	63,206	(1,983)	3,917,286	7,210	3,985,719	0	41,449	(1,983)	2,672,800	7,010	2,719,276
2026	0	63,179	1,979	3,917,286	7,210	3,989,654	0	41,422	1,979	2,672,800	7,010	2,723,211
2027	0	63,204	(3,488)	3,917,286	7,210	3,984,212	0	41,447	(3,488)	2,672,800	7,010	2,717,769
2028	0	63,170	1,438	3,917,286	7,210	3,989,104	0	41,413	1,438	2,672,800	7,010	2,722,661
2029	0	63,163	757	3,917,286	7,210	3,988,416	0	41,406	757	2,672,800	7,010	2,721,973
2030	0	63,163	6,809	3,917,286	7,210	3,994,468	0	41,406	6,809	2,672,800	7,010	2,728,025
2031	0	63,217	3,679	3,917,286	7,210	3,991,392	0	41,460	3,679	2,672,800	7,010	2,724,949
2032	0	63,121	(1,131)	3,917,286	7,210	3,986,486	0	41,364	(1,131)	2,672,800	7,010	2,720,043
2033	0	63,139	2,492	3,917,286	7,210	3,990,127	0	41,382	2,492	2,672,800	7,010	2,723,684
2034	0	63,167	(1,879)	3,917,286	7,210	3,985,784	0	41,410	(1,879)	2,672,800	7,010	2,719,341
2035	0	63,035	4,558	3,917,286	7,210	3,992,089	0	41,278	4,558	2,672,800	7,010	2,725,646

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued) / South San Joaquin Division (continued) / Teerink Pumping Plant						Chrisman Pumping Plant					
				Deliveries						Deliveries		
	Initial Fill Water (39)	Operational Losses (40)	Reservoir Storage Changes (41)	Water Supply (42)	Recreation (43)	Total (44)	Initial Fill Water (45)	Operational Losses (46)	Reservoir Storage Changes (47)	Water Supply (48)	Recreation (49)	Total (50)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	198	2	0	0	0	200	0	0	0	0	0	0
1971	7,533	(112)	0	3,552	0	10,973	7,366	(159)	0	0	0	7,207
1972	100,274	12,765	(6,558)	84,955	6,481	197,917	100,274	13,160	(6,558)	78,891	6,481	192,248
1973	204,638	21,543	1,329	229,685	1,147	458,342	204,638	32,414	1,329	209,769	1,147	449,297
1974	237,554	11,843	(15,295)	336,198	2,108	572,408	237,554	17,655	(15,295)	318,198	2,108	560,220
1975	103,352	19,763	(693)	621,706	3,358	747,486	103,352	25,326	(693)	586,286	3,358	717,629
1976	61,122	18,552	(152,171)	740,486	1,581	669,570	61,122	21,468	(152,171)	700,935	1,581	632,935
1977	0	16,415	(116,219)	246,349	560	147,105	0	15,698	(116,219)	240,191	560	140,230
1978	65,027	28,820	121,904	631,121	674	847,546	65,027	26,705	121,904	599,973	674	814,283
1979	12,302	50,663	(51,299)	625,561	502	637,729	12,302	50,580	(51,299)	586,959	502	599,044
1980	0	48,825	(134,009)	696,405	1,262	612,483	0	58,085	(134,009)	658,588	1,262	583,926
1981	0	51,600	23,359	998,307	4,112	1,077,378	0	48,844	23,359	959,274	4,112	1,035,589
1982	0	44,353	117,332	878,486	4,045	1,044,216	0	33,541	117,277	830,704	4,045	985,567
1983	0	43,961	(101,155)	487,915	7,291	438,012	0	34,698	(101,155)	450,489	7,291	391,323
1984	0	45,999	(115,088)	632,262	5,244	568,417	0	33,132	(115,092)	582,414	5,244	505,698
1985	0	50,106	139,973	854,684	4,804	1,049,567	0	54,831	139,954	810,606	4,804	1,010,195
1986	0	47,369	37,546	882,300	3,285	970,500	0	50,047	37,546	839,839	3,285	930,717
1987	0	46,445	(23,255)	887,905	6,937	918,032	0	31,888	23,318	853,157	6,937	915,300
1988	0	53,815	(25,372)	1,088,894	4,360	1,121,697	0	39,775	(25,372)	1,046,900	4,360	1,065,663
1989	0	49,088	(61,544)	1,382,599	7,490	1,377,633	0	42,307	(61,544)	1,339,358	7,490	1,327,611
1990	0	66,868	(14,836)	1,627,246	8,879	1,688,157	0	56,663	(14,836)	1,590,893	8,879	1,641,599
1991	0	40,564	107,302	447,935	4,593	600,394	0	34,016	107,302	446,443	4,593	592,354
1992	0	34,860	(57,784)	841,119	1,995	820,190	0	37,517	(57,784)	816,876	1,995	798,604
1993	0	27,158	(127,601)	799,006	1,676	700,239	0	28,614	(127,601)	771,009	1,676	673,698
1994	0	54,821	(100,389)	1,006,875	2,903	964,210	0	60,961	(100,258)	977,364	2,903	940,970
1995	0	40,843	115,024	586,420	1,669	743,956	0	28,602	114,869	560,286	1,669	705,426
1996	0	41,166	(6,608)	938,458	7,010	980,026	0	40,916	(6,608)	911,522	7,010	952,840
1997	0	42,028	74,959	1,016,391	7,010	1,140,388	0	41,778	74,959	987,891	7,010	1,111,638
1998	0	42,410	(3,820)	1,216,398	7,010	1,261,998	0	42,160	(3,820)	1,187,898	7,010	1,233,248
1999	0	37,931	(14,506)	1,374,599	7,010	1,405,034	0	37,681	(14,506)	1,346,099	7,010	1,376,284
2000	0	37,709	9,137	1,794,883	7,010	1,848,739	0	37,459	9,137	1,766,383	7,010	1,819,989
2001	0	37,684	(17,374)	2,503,700	7,010	2,531,020	0	37,434	(17,374)	2,464,300	7,010	2,491,370
2002	0	37,743	16,325	2,504,700	7,010	2,565,778	0	37,493	16,325	2,465,300	7,010	2,526,128
2003	0	37,796	580	2,505,700	7,010	2,551,086	0	37,546	580	2,466,300	7,010	2,511,436
2004	0	37,796	(2,058)	2,506,200	7,010	2,548,948	0	37,546	(2,058)	2,466,800	7,010	2,509,298
2005	0	37,743	(961)	2,536,700	7,010	2,580,492	0	37,493	(961)	2,497,300	7,010	2,540,842
2006	0	37,698	304	2,537,200	7,010	2,582,212	0	37,448	304	2,497,800	7,010	2,542,562
2007	0	37,782	1,178	2,538,150	7,010	2,584,120	0	37,532	1,178	2,498,750	7,010	2,544,470
2008	0	37,750	1,491	2,538,150	7,010	2,584,401	0	37,500	1,491	2,498,750	7,010	2,544,751
2009	0	37,737	1,308	2,538,150	7,010	2,584,205	0	37,487	1,308	2,498,750	7,010	2,544,555
2010	0	37,777	(11,477)	2,552,850	7,010	2,586,160	0	37,527	(11,477)	2,513,450	7,010	2,546,510
2011	0	37,786	(2,635)	2,552,850	7,010	2,595,011	0	37,536	(2,635)	2,513,450	7,010	2,555,361
2012	0	37,780	(697)	2,552,850	7,010	2,596,943	0	37,530	(697)	2,513,450	7,010	2,557,293
2013	0	37,740	10,049	2,552,850	7,010	2,607,649	0	37,490	10,049	2,513,450	7,010	2,567,999
2014	0	37,730	(6,006)	2,552,850	6,849	2,591,423	0	37,480	(6,006)	2,513,450	6,849	2,551,773
2015	0	37,730	9,104	2,555,850	7,010	2,609,694	0	37,480	9,104	2,516,450	7,010	2,570,044
2016	0	37,764	(10,227)	2,555,850	7,010	2,590,397	0	37,514	(10,227)	2,516,450	7,010	2,550,747
2017	0	37,738	(402)	2,555,850	7,010	2,600,196	0	37,488	(402)	2,516,450	7,010	2,560,546
2018	0	37,780	(1,047)	2,555,850	7,010	2,599,593	0	37,530	(1,047)	2,516,450	7,010	2,559,943
2019	0	37,740	(1,748)	2,555,850	7,010	2,598,852	0	37,490	(1,748)	2,516,450	7,010	2,559,202
2020	0	37,809	4,418	2,558,950	7,010	2,608,187	0	37,559	4,418	2,519,550	7,010	2,568,537
2021	0	37,819	61	2,559,600	7,010	2,604,490	0	37,569	61	2,520,200	7,010	2,564,840
2022	0	37,753	(1,704)	2,559,600	7,010	2,602,659	0	37,503	(1,704)	2,520,200	7,010	2,563,009
2023	0	37,809	1,770	2,559,600	7,010	2,606,189	0	37,559	1,770	2,520,200	7,010	2,566,539
2024	0	37,792	1,944	2,559,600	7,010	2,606,346	0	37,542	1,944	2,520,200	7,010	2,566,696
2025	0	37,819	(1,983)	2,559,600	7,010	2,602,446	0	37,569	(1,983)	2,520,200	7,010	2,562,796
2026	0	37,792	1,979	2,559,600	7,010	2,606,381	0	37,542	1,979	2,520,200	7,010	2,566,731
2027	0	37,817	(3,488)	2,559,600	7,010	2,600,939	0	37,567	(3,488)	2,520,200	7,010	2,561,289
2028	0	37,783	1,438	2,559,600	7,010	2,605,831	0	37,533	1,438	2,520,200	7,010	2,566,181
2029	0	37,776	757	2,559,600	7,010	2,605,143	0	37,526	757	2,520,200	7,010	2,565,493
2030	0	37,776	6,809	2,559,600	7,010	2,611,195	0	37,526	6,809	2,520,200	7,010	2,571,545
2031	0	37,830	3,679	2,559,600	7,010	2,608,119	0	37,580	3,679	2,520,200	7,010	2,568,469
2032	0	37,734	(1,131)	2,559,600	7,010	2,603,213	0	37,484	(1,131)	2,520,200	7,010	2,563,563
2033	0	37,752	2,492	2,559,600	7,010	2,606,854	0	37,502	2,492	2,520,200	7,010	2,567,204
2034	0	37,780	(1,879)	2,559,600	7,010	2,602,511	0	37,530	(1,879)	2,520,200	7,010	2,562,861
2035	0	37,648	4,558	2,559,600	7,010	2,608,816	0	37,398	4,558	2,520,200	7,010	2,569,166

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 Division					
	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	38,514	37,546	823,067	3,285	902,412	0	14,898	12,258	429,864	1,508	458,528
1987	0	28,213	(23,258)	841,322	6,937	853,214	0	11,365	(13,727)	407,870	1,239	406,747
1988	0	42,017	(25,372)	1,035,988	4,360	1,056,993	0	21,696	5,568	528,819	971	557,054
1989	0	32,270	(61,544)	1,328,041	7,490	1,306,257	0	4,686	(20,826)	716,360	1,407	701,627
1990	0	42,198	(14,836)	1,579,466	8,879	1,615,707	0	8,898	(6,089)	788,111	1,388	792,308
1991	0	33,999	107,302	441,220	4,593	587,114	0	17,908	35,455	177,311	394	231,068
1992	0	26,161	(57,784)	806,514	1,995	776,886	0	17,913	(15,862)	370,853	423	373,327
1993	0	11,946	(127,601)	759,348	1,676	645,369	0	9,304	(3,318)	308,085	443	314,514
1994	0	44,704	(100,361)	960,476	2,903	907,722	0	20,460	798	469,657	421	491,336
1995	0	28,442	114,721	542,056	1,669	686,888	0	13,480	(27,455)	384,427	427	370,879
1996	0	39,366	(6,608)	894,774	7,010	934,542	0	22,003	(16,913)	580,584	1,630	587,304
1997	0	40,228	74,959	972,291	7,010	1,094,488	0	22,852	59,771	566,191	1,630	650,444
1998	0	40,610	(3,820)	1,172,298	7,010	1,216,098	0	23,220	(3,706)	731,198	1,630	752,342
1999	0	36,131	(14,506)	1,330,499	7,010	1,359,134	0	21,157	(9,773)	883,399	1,630	896,413
2000	0	35,909	9,137	1,750,783	7,010	1,802,839	0	20,992	(25,751)	1,040,683	1,630	1,037,554
2001	0	35,884	(17,374)	2,441,600	7,010	2,467,120	0	20,813	(7,800)	1,272,200	1,630	1,286,843
2002	0	35,943	16,325	2,442,600	7,010	2,501,878	0	20,855	14,037	1,273,200	1,630	1,309,722
2003	0	35,996	580	2,443,600	7,010	2,487,186	0	20,901	641	1,274,200	1,630	1,297,372
2004	0	35,996	(2,058)	2,444,100	7,010	2,485,048	0	20,910	(1,051)	1,274,700	1,630	1,296,189
2005	0	35,943	(961)	2,474,600	7,010	2,516,592	0	20,877	699	1,305,200	1,630	1,328,406
2006	0	35,898	304	2,475,100	7,010	2,518,312	0	20,838	351	1,305,700	1,630	1,328,519
2007	0	35,982	1,178	2,476,050	7,010	2,520,220	0	20,921	21	1,306,650	1,630	1,329,222
2008	0	35,950	1,491	2,476,050	7,010	2,520,501	0	20,887	3,591	1,306,650	1,630	1,332,758
2009	0	35,937	1,308	2,476,050	7,010	2,520,305	0	20,859	(1,906)	1,306,650	1,630	1,327,233
2010	0	35,977	(11,477)	2,490,750	7,010	2,522,260	0	20,906	(10,485)	1,321,350	1,630	1,333,401
2011	0	35,986	(2,635)	2,490,750	7,010	2,531,111	0	20,898	(3,968)	1,321,350	1,630	1,339,910
2012	0	35,980	(697)	2,490,750	7,010	2,533,043	0	20,930	3,800	1,321,350	1,630	1,347,710
2013	0	35,940	10,049	2,490,750	7,010	2,543,749	0	20,882	7,195	1,321,350	1,630	1,351,057
2014	0	35,930	(6,006)	2,490,750	6,849	2,527,523	0	20,858	(7,294)	1,321,350	1,469	1,336,383
2015	0	35,930	9,104	2,493,750	7,010	2,545,794	0	20,839	8,887	1,324,350	1,630	1,355,706
2016	0	35,964	(10,227)	2,493,750	7,010	2,526,497	0	20,897	(8,870)	1,324,350	1,630	1,338,007
2017	0	35,938	(402)	2,493,750	7,010	2,536,296	0	20,865	(731)	1,324,350	1,630	1,346,114
2018	0	35,980	(1,047)	2,493,750	7,010	2,535,693	0	20,921	731	1,324,350	1,630	1,347,632
2019	0	35,940	(1,748)	2,493,750	7,010	2,534,952	0	20,872	(3,133)	1,324,350	1,630	1,343,719
2020	0	36,009	4,418	2,496,850	7,010	2,544,287	0	20,935	4,017	1,327,450	1,630	1,354,032
2021	0	36,019	61	2,497,500	7,010	2,540,590	0	20,953	(158)	1,328,100	1,630	1,350,525
2022	0	35,953	(1,704)	2,497,500	7,010	2,538,759	0	20,892	(1,099)	1,328,100	1,630	1,349,523
2023	0	36,009	1,770	2,497,500	7,010	2,542,289	0	20,934	1,176	1,328,100	1,630	1,351,840
2024	0	35,992	1,944	2,497,500	7,010	2,542,446	0	20,930	3,263	1,328,100	1,630	1,353,923
2025	0	36,019	(1,983)	2,497,500	7,010	2,538,546	0	20,955	(3,292)	1,328,100	1,630	1,347,393
2026	0	35,992	1,979	2,497,500	7,010	2,542,481	0	20,930	3,295	1,328,100	1,630	1,353,955
2027	0	36,017	(3,488)	2,497,500	7,010	2,537,039	0	20,953	(4,801)	1,328,100	1,630	1,345,882
2028	0	35,983	1,438	2,497,500	7,010	2,541,931	0	20,912	2,038	1,328,100	1,630	1,352,680
2029	0	35,976	757	2,497,500	7,010	2,541,243	0	20,906	160	1,328,100	1,630	1,350,796
2030	0	35,976	6,809	2,497,500	7,010	2,547,295	0	20,890	7,491	1,328,100	1,630	1,358,111
2031	0	36,030	3,679	2,497,500	7,010	2,544,219	0	20,949	3,780	1,328,100	1,630	1,354,459
2032	0	35,934	(1,131)	2,497,500	7,010	2,539,313	0	20,872	(608)	1,328,100	1,630	1,349,994
2033	0	35,952	2,492	2,497,500	7,010	2,542,954	0	20,889	1,625	1,328,100	1,630	1,352,244
2034	0	35,980	(1,879)	2,497,500	7,010	2,538,611	0	20,894	(1,279)	1,328,100	1,630	1,349,345
2035	0	35,848	4,558	2,497,500	7,010	2,544,916	0	20,944	25,246	1,328,100	1,630	1,375,920

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued) / Mojave Division (continued) / Pearblossom Pumping Plant						Mojave Siphon Powerplant					
				Deliveries						Deliveries		
	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	31,039	12,258	394,156	1,508	438,961	0	0	0	0	0	0
1987	0	27,319	(14,928)	367,531	1,239	381,161	0	0	0	0	0	0
1988	0	32,209	5,568	492,551	971	531,299	0	0	0	0	0	0
1989	0	31,500	(20,826)	661,189	1,407	673,270	0	0	0	0	0	0
1990	0	32,672	(6,089)	730,560	1,388	758,531	0	0	0	0	0	0
1991	0	15,209	35,455	163,916	394	214,974	0	0	0	0	0	0
1992	0	17,029	(15,862)	334,992	423	336,582	0	0	0	0	0	0
1993	0	9,779	(3,318)	254,980	443	261,884	0	0	0	0	0	0
1994	0	392	(85)	409,589	421	410,317	0	0	0	0	0	0
1995	0	6,583	(27,591)	328,473	427	307,892	0	0	0	0	0	0
1996	0	16,653	(16,913)	506,229	1,430	507,399	0	13,183	(16,913)	504,076	1,430	501,776
1997	0	17,502	59,771	484,668	1,430	563,371	0	14,032	59,771	484,668	1,430	559,901
1998	0	17,870	(3,706)	646,668	1,430	662,262	0	14,400	(3,706)	646,668	1,430	658,792
1999	0	15,807	(9,773)	794,568	1,430	802,032	0	12,337	(9,773)	794,568	1,430	798,562
2000	0	15,642	(25,751)	948,368	1,430	939,689	0	12,172	(25,751)	948,368	1,430	936,219
2001	0	15,463	(7,800)	1,114,200	1,430	1,123,293	0	11,993	(7,800)	1,114,200	1,430	1,119,823
2002	0	15,505	14,037	1,115,200	1,430	1,146,172	0	12,035	14,037	1,115,200	1,430	1,142,702
2003	0	15,551	641	1,116,200	1,430	1,133,822	0	12,081	641	1,116,200	1,430	1,130,352
2004	0	15,560	(1,051)	1,116,700	1,430	1,132,639	0	12,090	(1,051)	1,116,700	1,430	1,129,169
2005	0	15,527	699	1,147,200	1,430	1,164,856	0	12,057	699	1,147,200	1,430	1,161,386
2006	0	15,488	351	1,147,700	1,430	1,164,969	0	12,018	351	1,147,700	1,430	1,161,499
2007	0	15,571	21	1,148,650	1,430	1,165,672	0	12,101	21	1,148,650	1,430	1,162,202
2008	0	15,537	3,591	1,148,650	1,430	1,169,208	0	12,067	3,591	1,148,650	1,430	1,165,738
2009	0	15,509	(1,906)	1,148,650	1,430	1,163,683	0	12,039	(1,906)	1,148,650	1,430	1,160,213
2010	0	15,556	(10,485)	1,163,350	1,430	1,169,851	0	12,086	(10,485)	1,163,350	1,430	1,166,381
2011	0	15,548	(3,968)	1,163,350	1,430	1,176,360	0	12,078	(3,968)	1,163,350	1,430	1,172,890
2012	0	15,580	3,800	1,163,350	1,430	1,184,160	0	12,110	3,800	1,163,350	1,430	1,180,690
2013	0	15,532	7,195	1,163,350	1,430	1,187,507	0	12,062	7,195	1,163,350	1,430	1,184,037
2014	0	15,508	(7,294)	1,163,350	1,269	1,172,833	0	12,038	(7,294)	1,163,350	1,269	1,169,363
2015	0	15,489	8,887	1,166,350	1,430	1,192,156	0	12,019	8,887	1,166,350	1,430	1,188,686
2016	0	15,547	(8,870)	1,166,350	1,430	1,174,457	0	12,077	(8,870)	1,166,350	1,430	1,170,987
2017	0	15,515	(731)	1,166,350	1,430	1,182,564	0	12,045	(731)	1,166,350	1,430	1,179,094
2018	0	15,571	731	1,166,350	1,430	1,184,082	0	12,101	731	1,166,350	1,430	1,180,612
2019	0	15,522	(3,133)	1,166,350	1,430	1,180,169	0	12,052	(3,133)	1,166,350	1,430	1,176,699
2020	0	15,585	4,017	1,169,450	1,430	1,190,482	0	12,115	4,017	1,169,450	1,430	1,187,012
2021	0	15,603	(158)	1,170,100	1,430	1,186,975	0	12,133	(158)	1,170,100	1,430	1,183,505
2022	0	15,542	(1,099)	1,170,100	1,430	1,185,973	0	12,072	(1,099)	1,170,100	1,430	1,182,503
2023	0	15,584	1,176	1,170,100	1,430	1,188,290	0	12,114	1,176	1,170,100	1,430	1,184,820
2024	0	15,580	3,263	1,170,100	1,430	1,190,373	0	12,110	3,263	1,170,100	1,430	1,186,903
2025	0	15,605	(3,292)	1,170,100	1,430	1,183,843	0	12,135	(3,292)	1,170,100	1,430	1,180,373
2026	0	15,580	3,295	1,170,100	1,430	1,190,405	0	12,110	3,295	1,170,100	1,430	1,186,935
2027	0	15,603	(4,801)	1,170,100	1,430	1,182,332	0	12,133	(4,801)	1,170,100	1,430	1,178,862
2028	0	15,562	2,038	1,170,100	1,430	1,189,130	0	12,092	2,038	1,170,100	1,430	1,185,660
2029	0	15,556	160	1,170,100	1,430	1,187,246	0	12,086	160	1,170,100	1,430	1,183,776
2030	0	15,540	7,491	1,170,100	1,430	1,194,561	0	12,070	7,491	1,170,100	1,430	1,191,091
2031	0	15,599	3,780	1,170,100	1,430	1,190,909	0	12,129	3,780	1,170,100	1,430	1,187,439
2032	0	15,522	(608)	1,170,100	1,430	1,186,444	0	12,052	(608)	1,170,100	1,430	1,182,974
2033	0	15,539	1,625	1,170,100	1,430	1,188,694	0	12,069	1,625	1,170,100	1,430	1,185,224
2034	0	15,544	(1,279)	1,170,100	1,430	1,185,795	0	12,074	(1,279)	1,170,100	1,430	1,182,325
2035	0	15,594	25,246	1,170,100	1,430	1,212,370	0	12,124	25,246	1,170,100	1,430	1,208,900

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	Santa Ana Division						West Branch, California Aqueduct					
	Devil Canyon Powerplant						Oso Pumping Plant					
	Initial Fill Water (75)	Operational Losses (76)	Reservoir Storage Changes (77)	Deliveries: Water Supply (78)	Deliveries: Recreation (79)	Total (80)	Initial Fill Water (81)	Operational Losses (82)	Reservoir Storage Changes (83)	Deliveries: Water Supply (84)	Deliveries: 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	9,646	8,339	392,650	1,378	412,013	0	23,816	25,288	393,203	1,777	444,084
1987	0	7,919	(11,331)	365,451	1,118	363,157	0	18,952	(9,490)	433,452	5,698	448,612
1988	0	11,090	2,238	490,536	861	504,725	0	20,461	(30,940)	507,169	3,389	500,079
1989	0	13,116	(5,487)	658,730	1,301	667,660	0	27,914	(40,718)	611,681	6,083	604,960
1990	0	13,439	(4,622)	728,723	1,281	738,821	0	33,666	(8,747)	791,355	7,491	823,765
1991	0	10,836	18,430	161,032	340	190,638	0	16,460	71,847	263,909	4,199	356,415
1992	0	12,197	(9,051)	325,352	371	328,869	0	8,200	(41,922)	435,661	1,572	403,511
1993	0	5,602	5,593	244,678	364	256,237	0	2,668	(124,283)	451,263	1,233	330,881
1994	0	10,921	(11,051)	393,690	348	393,908	0	23,972	(101,160)	490,819	2,482	416,113
1995	0	10,373	3,227	320,978	358	334,936	0	14,869	142,186	157,629	1,242	315,926
1996	0	10,155	12,087	488,979	1,250	512,471	0	17,313	10,305	314,190	5,380	347,188
1997	0	10,117	(2,159)	430,000	1,250	439,208	0	17,326	15,188	406,100	5,380	443,994
1998	0	10,153	(1,776)	592,000	1,250	601,627	0	17,340	(114)	441,100	5,380	463,706
1999	0	8,717	(1,719)	741,000	1,250	749,248	0	14,924	(4,733)	447,100	5,380	462,671
2000	0	8,411	(14,448)	897,000	1,250	892,213	0	14,867	34,888	710,100	5,380	765,235
2001	0	8,414	411	1,057,600	1,250	1,067,675	0	15,021	(9,574)	1,169,400	5,380	1,180,227
2002	0	8,445	6,815	1,058,600	1,250	1,075,110	0	15,038	2,288	1,169,400	5,380	1,192,106
2003	0	8,438	(5,600)	1,059,600	1,250	1,063,688	0	15,045	(61)	1,169,400	5,380	1,189,764
2004	0	8,431	2,463	1,060,100	1,250	1,072,244	0	15,036	(1,007)	1,169,400	5,380	1,188,809
2005	0	8,418	(226)	1,090,600	1,250	1,100,042	0	15,016	(1,660)	1,169,400	5,380	1,188,136
2006	0	8,435	(4,480)	1,091,100	1,250	1,096,305	0	15,010	(47)	1,169,400	5,380	1,189,743
2007	0	8,428	3,305	1,092,050	1,250	1,105,033	0	15,011	1,157	1,169,400	5,380	1,190,948
2008	0	8,403	(573)	1,092,050	1,250	1,101,130	0	15,013	(2,100)	1,169,400	5,380	1,187,693
2009	0	8,424	757	1,092,050	1,250	1,102,481	0	15,028	3,214	1,169,400	5,380	1,193,022
2010	0	8,436	3,920	1,106,750	1,250	1,120,356	0	15,021	(992)	1,169,400	5,380	1,188,809
2011	0	8,435	(3,415)	1,106,750	1,250	1,113,020	0	15,038	1,333	1,169,400	5,380	1,191,151
2012	0	8,456	253	1,106,750	1,250	1,116,709	0	15,000	(4,497)	1,169,400	5,380	1,185,283
2013	0	8,438	1,872	1,106,750	1,250	1,118,310	0	15,008	2,854	1,169,400	5,380	1,192,642
2014	0	8,452	(2,402)	1,106,750	1,250	1,114,050	0	15,022	1,288	1,169,400	5,380	1,191,090
2015	0	8,426	92	1,109,750	1,250	1,119,518	0	15,041	217	1,169,400	5,380	1,190,038
2016	0	8,420	1,921	1,109,750	1,250	1,121,341	0	15,017	(1,357)	1,169,400	5,380	1,188,440
2017	0	8,434	1,809	1,109,750	1,250	1,121,243	0	15,023	329	1,169,400	5,380	1,190,132
2018	0	8,420	(836)	1,109,750	1,250	1,118,584	0	15,009	(1,778)	1,169,400	5,380	1,188,011
2019	0	8,450	(131)	1,109,750	1,250	1,119,319	0	15,018	1,385	1,169,400	5,380	1,191,183
2020	0	8,446	(2,579)	1,112,850	1,250	1,119,967	0	15,024	401	1,169,400	5,380	1,190,205
2021	0	8,423	(393)	1,113,500	1,250	1,122,780	0	15,016	219	1,169,400	5,380	1,190,015
2022	0	8,423	1,445	1,113,500	1,250	1,124,618	0	15,011	(605)	1,169,400	5,380	1,189,186
2023	0	8,413	(1,612)	1,113,500	1,250	1,121,551	0	15,025	594	1,169,400	5,380	1,190,399
2024	0	8,444	3,803	1,113,500	1,250	1,126,997	0	15,012	(1,319)	1,169,400	5,380	1,188,473
2025	0	8,430	(3,053)	1,113,500	1,250	1,120,127	0	15,014	1,309	1,169,400	5,380	1,191,103
2026	0	8,444	3,054	1,113,500	1,250	1,126,248	0	15,012	(1,316)	1,169,400	5,380	1,188,476
2027	0	8,428	(1,121)	1,113,500	1,250	1,122,057	0	15,014	1,313	1,169,400	5,380	1,191,107
2028	0	8,428	(375)	1,113,500	1,250	1,122,803	0	15,021	(600)	1,169,400	5,380	1,189,201
2029	0	8,396	(1,741)	1,113,500	1,250	1,121,405	0	15,020	597	1,169,400	5,380	1,190,397
2030	0	8,413	2,206	1,113,500	1,250	1,125,369	0	15,036	(682)	1,169,400	5,380	1,189,134
2031	0	8,429	(4,907)	1,113,500	1,250	1,118,272	0	15,031	(101)	1,169,400	5,380	1,189,710
2032	0	8,419	2,307	1,113,500	1,250	1,125,476	0	15,012	(523)	1,169,400	5,380	1,189,269
2033	0	8,408	2,536	1,113,500	1,250	1,125,694	0	15,013	867	1,169,400	5,380	1,190,660
2034	0	8,433	(2,534)	1,113,500	1,250	1,120,649	0	15,036	(600)	1,169,400	5,380	1,189,216
2035	0	8,532	13,198	1,113,500	1,250	1,136,480	0	14,854	(20,688)	1,169,400	5,380	1,168,946

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued) / West Branch, California Aqueduct (continued) / Warne Powerplant					
	Initial Fill Water (87)	Operational Losses (88)	Reservoir Storage Changes (89)	Deliveries: Water Supply (90)	Deliveries: Recreation (91)	Total (92)
1961	0	0	0	0	0	0
1962	0	0	0	0	0	0
1963	0	0	0	0	0	0
1964	0	0	0	0	0	0
1965	0	0	0	0	0	0
1966	0	0	0	0	0	0
1967	0	0	0	0	0	0
1968	0	0	0	0	0	0
1969	0	0	0	0	0	0
1970	0	0	0	0	0	0
1971	0	0	0	0	0	0
1972	0	0	0	0	0	0
1973	0	0	0	0	0	0
1974	0	0	0	0	0	0
1975	0	0	0	0	0	0
1976	0	0	0	0	0	0
1977	0	0	0	0	0	0
1978	0	0	0	0	0	0
1979	0	0	0	0	0	0
1980	0	0	0	0	0	0
1981	0	0	0	0	0	0
1982	0	24,468	61,169	360,878	2,126	448,641
1983	0	20,780	(74,308)	166,995	6,111	119,578
1984	0	13,572	(139,219)	275,212	2,208	151,773
1985	0	29,286	141,492	403,097	874	574,749
1986	0	23,008	25,288	393,203	1,777	443,276
1987	0	22,871	(9,464)	433,452	5,698	452,557
1988	0	23,253	(31,545)	507,169	3,389	502,266
1989	0	27,131	(40,718)	611,681	6,083	604,177
1990	0	34,208	(8,747)	791,355	7,491	824,307
1991	0	16,908	71,847	263,909	4,199	356,863
1992	0	9,638	(41,922)	435,661	1,572	404,949
1993	0	1,922	(124,283)	451,257	1,233	330,129
1994	0	24,122	(96,817)	490,819	2,482	420,606
1995	0	15,862	135,291	157,629	1,242	310,024
1996	0	15,403	10,305	314,190	5,380	345,278
1997	0	15,416	15,188	406,100	5,380	442,084
1998	0	15,430	(114)	441,100	5,380	461,796
1999	0	13,014	(4,733)	447,100	5,380	460,761
2000	0	12,957	34,888	710,100	5,380	763,325
2001	0	13,111	(9,574)	1,169,400	5,380	1,178,317
2002	0	13,128	2,288	1,169,400	5,380	1,190,196
2003	0	13,135	(61)	1,169,400	5,380	1,187,854
2004	0	13,126	(1,007)	1,169,400	5,380	1,186,899
2005	0	13,106	(1,660)	1,169,400	5,380	1,186,226
2006	0	13,100	(47)	1,169,400	5,380	1,187,833
2007	0	13,101	1,157	1,169,400	5,380	1,189,038
2008	0	13,103	(2,100)	1,169,400	5,380	1,185,783
2009	0	13,118	3,214	1,169,400	5,380	1,191,112
2010	0	13,111	(992)	1,169,400	5,380	1,186,899
2011	0	13,128	1,333	1,169,400	5,380	1,189,241
2012	0	13,090	(4,497)	1,169,400	5,380	1,183,373
2013	0	13,098	2,854	1,169,400	5,380	1,190,732
2014	0	13,112	1,288	1,169,400	5,380	1,189,180
2015	0	13,131	217	1,169,400	5,380	1,188,128
2016	0	13,107	(1,357)	1,169,400	5,380	1,186,530
2017	0	13,113	329	1,169,400	5,380	1,188,222
2018	0	13,099	(1,778)	1,169,400	5,380	1,186,101
2019	0	13,108	1,385	1,169,400	5,380	1,189,273
2020	0	13,114	401	1,169,400	5,380	1,188,295
2021	0	13,106	219	1,169,400	5,380	1,188,105
2022	0	13,101	(605)	1,169,400	5,380	1,187,276
2023	0	13,115	594	1,169,400	5,380	1,188,489
2024	0	13,102	(1,319)	1,169,400	5,380	1,186,563
2025	0	13,104	1,309	1,169,400	5,380	1,189,193
2026	0	13,102	(1,316)	1,169,400	5,380	1,186,566
2027	0	13,104	1,313	1,169,400	5,380	1,189,197
2028	0	13,111	(600)	1,169,400	5,380	1,187,291
2029	0	13,110	597	1,169,400	5,380	1,188,487
2030	0	13,126	(682)	1,169,400	5,380	1,187,224
2031	0	13,121	(101)	1,169,400	5,380	1,187,800
2032	0	13,102	(523)	1,169,400	5,380	1,187,359
2033	0	13,103	867	1,169,400	5,380	1,188,750
2034	0	13,126	(600)	1,169,400	5,380	1,187,306
2035	0	12,944	(20,688)	1,169,400	5,380	1,167,036

Calendar Year	California Aqueduct (continued) / West Branch, California Aqueduct (continued) / Castaic Powerplant					
	Initial Fill Water (93)	Operational Losses (94)	Reservoir Storage Changes (95)	Deliveries: Water Supply (96)	Deliveries: Recreation (97)	Total (98)
1961	0	0	0	0	0	0
1962	0	0	0	0	0	0
1963	0	0	0	0	0	0
1964	0	0	0	0	0	0
1965	0	0	0	0	0	0
1966	0	0	0	0	0	0
1967	0	0	0	0	0	0
1968	0	0	0	0	0	0
1969	0	0	0	0	0	0
1970	0	0	0	0	0	0
1971	0	0	0	0	0	0
1972	57,364	1,788	(6,162)	71,938	6,481	131,409
1973	37,198	6,430	4,542	155,297	1,075	204,542
1974	82,364	1,772	(950)	209,136	541	292,863
1975	90,460	5,002	(1,534)	374,280	1,563	469,771
1976	55,990	(7,695)	(132,036)	420,684	1,429	338,372
1977	0	(1,485)	(102,532)	122,447	(20)	18,410
1978	45,105	(2,264)	129,523	171,139	176	343,679
1979	0	(2,339)	(20,400)	145,598	0	122,859
1980	0	991	(118,026)	165,931	481	49,377
1981	0	(44,416)	47,244	283,264	2,704	288,796
1982	0	(60,135)	59,069	360,878	1,187	360,999
1983	0	(33,418)	(46,904)	166,995	2,618	89,291
1984	0	(29,618)	(139,545)	275,212	2,201	108,250
1985	0	(4,622)	135,007	403,097	844	534,326
1986	0	(5,440)	25,120	393,203	1,777	414,660
1987	0	1,467	(6,069)	433,452	2,734	431,584
1988	0	12,650	(28,590)	507,169	1,359	492,588
1989	0	634	(40,214)	611,681	3,161	575,262
1990	0	(14,012)	(15,110)	786,519	3,419	760,816
1991	0	(871)	91,055	262,921	2,283	355,388
1992	0	(609)	(58,862)	435,661	1,543	377,733
1993	0	21,959	(77,428)	451,257	1,211	396,999
1994	0	6,176	(96,023)	490,819	2,459	403,431
1995	0	20,400	133,126	157,629	1,223	312,378
1996	0	9,678	10,305	314,190	2,330	336,503
1997	0	9,691	15,188	401,100	2,330	428,309
1998	0	9,705	(114)	436,100	2,330	448,021
1999	0	6,726	(4,733)	442,100	2,330	446,423
2000	0	6,674	34,888	705,100	2,330	748,992
2001	0	6,826	(9,574)	1,164,400	2,330	1,163,982
2002	0	6,843	2,288	1,164,400	2,330	1,175,861
2003	0	6,850	(61)	1,164,400	2,330	1,173,519
2004	0	6,841	(1,007)	1,164,400	2,330	1,172,564
2005	0	6,821	(1,660)	1,164,400	2,330	1,171,891
2006	0	6,815	(47)	1,164,400	2,330	1,173,498
2007	0	6,816	1,157	1,164,400	2,330	1,174,703
2008	0	6,818	(2,100)	1,164,400	2,330	1,171,448
2009	0	6,833	3,214	1,164,400	2,330	1,176,777
2010	0	6,826	(992)	1,164,400	2,330	1,172,564
2011	0	6,843	1,333	1,164,400	2,330	1,174,906
2012	0	6,805	(4,497)	1,164,400	2,330	1,169,038
2013	0	6,813	2,854	1,164,400	2,330	1,176,397
2014	0	6,827	1,288	1,164,400	2,330	1,174,845
2015	0	6,846	217	1,164,400	2,330	1,173,793
2016	0	6,822	(1,357)	1,164,400	2,330	1,172,195
2017	0	6,828	329	1,164,400	2,330	1,173,887
2018	0	6,814	(1,778)	1,164,400	2,330	1,171,766
2019	0	6,823	1,385	1,164,400	2,330	1,174,938
2020	0	6,829	401	1,164,400	2,330	1,173,960
2021	0	6,821	219	1,164,400	2,330	1,173,770
2022	0	6,816	(605)	1,164,400	2,330	1,172,941
2023	0	6,830	594	1,164,400	2,330	1,174,154
2024	0	6,817	(1,319)	1,164,400	2,330	1,172,228
2025	0	6,819	1,309	1,164,400	2,330	1,174,858
2026	0	6,817	(1,316)	1,164,400	2,330	1,172,231
2027	0	6,819	1,313	1,164,400	2,330	1,174,862
2028	0	6,826	(600)	1,164,400	2,330	1,172,956
2029	0	6,825	597	1,164,400	2,330	1,174,152
2030	0	6,841	(682)	1,164,400	2,330	1,172,889
2031	0	6,836	(101)	1,164,400	2,330	1,173,465
2032	0	6,817	(523)	1,164,400	2,330	1,173,024
2033	0	6,818	867	1,164,400	2,330	1,174,415
2034	0	6,841	(600)	1,164,400	2,330	1,172,971
2035	0	6,659	(20,688)	1,164,400	2,330	1,152,701

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: Initial Fill Water (99)	Operational Losses (100)	Water Supply Delivery (101)	Total (102)	Devil's Den, Bluestone, and Polonio Pass Pumping Plants and San Luis Obispo Powerplant: 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	663	106,803	107,466	73	4,723	4,796
1997	0	663	149,416	150,079	73	47,716	47,789
1998	0	663	149,416	150,079	73	47,716	47,789
1999	0	663	149,416	150,079	73	47,716	47,789
2000	0	663	148,416	149,079	73	46,716	46,789
2001	0	663	172,186	172,849	73	70,486	70,559
2002	0	663	172,186	172,849	73	70,486	70,559
2003	0	663	172,186	172,849	73	70,486	70,559
2004	0	663	172,186	172,849	73	70,486	70,559
2005	0	663	172,186	172,849	73	70,486	70,559
2006	0	663	172,186	172,849	73	70,486	70,559
2007	0	663	172,186	172,849	73	70,486	70,559
2008	0	663	172,186	172,849	73	70,486	70,559
2009	0	663	172,186	172,849	73	70,486	70,559
2010	0	663	172,186	172,849	73	70,486	70,559
2011	0	663	172,186	172,849	73	70,486	70,559
2012	0	663	172,186	172,849	73	70,486	70,559
2013	0	663	172,186	172,849	73	70,486	70,559
2014	0	663	172,186	172,849	73	70,486	70,559
2015	0	663	172,186	172,849	73	70,486	70,559
2016	0	663	172,186	172,849	73	70,486	70,559
2017	0	663	172,186	172,849	73	70,486	70,559
2018	0	663	172,186	172,849	73	70,486	70,559
2019	0	663	172,186	172,849	73	70,486	70,559
2020	0	663	172,186	172,849	73	70,486	70,559
2021	0	663	172,186	172,849	73	70,486	70,559
2022	0	663	172,186	172,849	73	70,486	70,559
2023	0	663	172,186	172,849	73	70,486	70,559
2024	0	663	172,186	172,849	73	70,486	70,559
2025	0	663	172,186	172,849	73	70,486	70,559
2026	0	663	172,186	172,849	73	70,486	70,559
2027	0	663	172,186	172,849	73	70,486	70,559
2028	0	663	172,186	172,849	73	70,486	70,559
2029	0	663	172,186	172,849	73	70,486	70,559
2030	0	663	172,186	172,849	73	70,486	70,559
2031	0	663	172,186	172,849	73	70,486	70,559
2032	0	663	172,186	172,849	73	70,486	70,559
2033	0	663	172,186	172,849	73	70,486	70,559
2034	0	663	172,186	172,849	73	70,486	70,559
2035	0	663	172,186	172,849	73	70,486	70,559

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	Total State Water Project Capital Cost
	Miscellaneous Income Credited to Construction (a	Allowance for Future Price Escalation (b	Costs of Construction of Delivery Structures (c	Costs of Requested Excess Capacity and Future Enlargement (d	Capital Cost Component of Delta Water Charge (e	Capital Cost Component of Transportation Water Charge (f	Water Supply and Power Total		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
CONSERVATION FACILITIES									
Upper Feather Division									
Frenchman Dam & Lake	160	0	0	0	601	0	761	2,881	3,642
Grizzly Valley Dam & Lake Davis	50	0	0	0	39	0	89	7,364	7,453
Antelope Dam & Lake	0	0	0	0	0	0	0	5,523	5,523
Abbey Bridge Dam & Reservoir	0	0	0	0	0	0	0	519	519
Dixie Refuge Dam & Reservoir	0	0	0	0	0	0	0	236	236
Total, Upper Feather Division	210	0	0	0	640	0	850	16,523	17,373
Oroville Division									
Mutipurpose Facilities	5,123	13	0	0	372,724	0	377,860	88,601	466,461
Specific Power Facilities	233	3	0	0	95,415	0	95,651	835	96,486
Total, Orovill Division	5,356	6	0	0	468,139	0	473,511	89,436	562,947
California Aqueduct									
North San Joaquin Division	289	58	0	0	80,310	0	80,657	2,749	83,406
San Luis Division	7,372	11	0	0	105,039	0	112,422	4,541	116,963
Total, California Aqueduct	7,661	69	0	0	185,349	0	193,079	7,290	200,369
Delta Facilities	51,835	8,619	0	0	296,370	0	356,824	30,657	387,481
Planning and Preoperation	2,324	7,631	0	0	139,232	0	149,187	0	149,187
TOTAL, CONSERVATION FACILITIES	67,386	16,335	0	0	1,089,730	0	1,173,451	143,906	1,317,357
TRANSPORTATION FACILITIES									
Upper Feather Division									
Grizzly Valley Pipeline	0	0	181	0	0	341	522	0	522
North Bay Aqueduct	649	92	676	0	0	95,263	96,680	0	96,680
South Bay Aqueduct	2,029	5	1,582	0	0	54,721	58,337	21,717	80,054
California Aqueduct									
North San Joaquin Division	678	129	51	0	0	179,084	179,942	6,420	186,362
San Luis Division	4,227	6	0	0	0	116,519	120,752	7,112	127,864
South San Joaquin Division	702	10	3,317	2,093	0	280,049	286,171	16,544	302,715
Tehachapi Division	(88)	12	0	5,230	0	297,596	302,750	18,062	320,812
Mojave Division	942	23	678	0	0	294,965	296,608	36,375	332,983
Santa Ana Division	4,640	102	5,872	5,331	0	263,800	279,745	30,770	310,515
West Branch	35,998	528	456	37	0	473,723	510,742	33,728	544,470
Coastal Branch	17	46	159	0	0	296,695	296,917	0	296,917
Total, California Aqueduct	47,116	856	10,533	12,691	0	2,202,431	2,273,627	149,011	2,422,638
TOTAL, TRANSPORTATION FACILITIES	49,794	953	12,972	12,691	0	2,352,756	2,429,166	170,728	2,599,894
EAST BRANCH ENLARGEMENT	0	43	0	0	0	436,154	436,197	0	436,197
SAN JOAQUIN DRAINAGE FACILITIES	0	0	0	0	0	0	0	94,351	94,351
OFF-AQUEDUCT POWER GENERATION FACILITIES	0	0	0	0	0	459,245	459,245	0	459,245
SMALL HYDRO POWER GENERATION FACILITIES	0	0	0	0	14,241	75,245	89,486	0	89,486
LAND PURCHASE-KERN WATER BANK	0	0	0	0	34,686	0	34,686	0	34,686
UNASSIGNED/MISCELLANEOUS	305	0	0	0	0	0	305	265	570
DAVIS - GRUNSKY	0	2,457	0	0	0	0	2,457	127,543	130,000
TOTAL THROUGH 2010	117,485	19,788	12,972	12,691	1,138,657	3,323,400	4,624,993	536,793	5,161,786

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 $48,510,000 of planning costs financed from Systems Revenues and not included in Table 15-3. Oroville Division total reduced by $14,241,000 for costs included under Small Hydro. Cal-Fed Program costs totaling $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 $75,245,000 for cost included under Small Hydro. Coastal Branch does not include $177,774,000 of capital costs in Table 15-3. East Branch Extension's $41,630,000 capital cost is not included in Table B-7, but it is included in Table 15-3.

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
	1952–1992 (1)	1993 (2)	1994 (3)	1995 (4)	1996 (5)	1997 (6)	(7)
Feather River Area							
County of Butte	128,212	6,807	1,527	0	0	0	136,546
Plumas County Flood Control and Water Conservation District	0	645	0	0	0	0	645
Thermalito Irrigation District (b	43,939	0	0	0	0	0	43,939
Subtotal	172,151	7,452	1,527	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	660,313	1,800	0	0	0	0	662,113
Subtotal	673,903	1,800	0	0	0	0	675,703
South Bay Area							
Alameda County Flood Control and Water Conservation District, Zone 7	238,745	9,584	1,996	0	0	0	250,325
Alameda County Water District	231,711	773	0	2,000	0	0	234,484
Santa Clara Valley Water District	14,077	360	0	0	0	0	14,437
San Francisco Water Department (b	1,043,262	15,307	22,096	2,000	0	0	1,082,665
Subtotal	1,527,795	26,024	24,092	4,000	0	0	1,581,911
Central Coastal Area							
San Luis Obispo County Flood Control and Water Conservation District	0	7,000	2,192	0	0	0	9,192
Santa Barbara County Flood Control and Water Conservation District	0	65,000	2,058	0	0	0	67,058
Subtotal	0	72,000	4,250	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	0	0	6,000	0	0	295,412
Empire West Side Irrigation District	6,358	0	0	0	0	0	6,358
Green Valley Water District (c	5,292	0	0	0	0	0	5,292
Kern County Water Agency	2,709,182	29,152	0	0	0	0	2,738,334
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	3,421,546	29,152	0	6,000	0	0	3,456,698
Southern California Area							
Antelope Valley-East Kern Water Agency	374,323	0	10,427	0	0	0	384,750
Castaic Lake Water Agency	351,745	3,000	8,957	7,000	0	0	370,702
Coachella Valley Water District	14,206	0	0	0	0	0	14,206
Crestline-Lake Arrowhead Water Agency	12,097	0	0	0	0	0	12,097
Desert Water Agency	23,438	0	0	0	0	0	23,438
Littlerock Creek Irrigation District	23,732	0	0	0	0	0	23,732
Mojave Water Agency	139,667	2,331	36,792	6,500	0	0	185,290
Palmdale Water District	34,173	0	0	0	0	0	34,173
San Bernardino Valley Municipal Water District	801,669	0	0	0	0	0	801,669
San Gabriel Valley Municipal Water District	131,052	0	0	0	0	0	131,052
San Gorgonio Pass Water Agency	66,530	0	0	0	0	0	66,530
The Metropolitan Water District of Southern California	4,779,958	8,536	83,411	1,000	0	0	4,872,905
Ventura County Flood Control District	79,699	0	0	0	0	0	79,699
Subtotal	6,832,289	13,867	139,587	14,500	0	0	7,000,243
TOTAL	12,627,684	78,295	165,206	24,500	0	0	12,971,935

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

Calendar Year	Total Advance Payments and Credits for Excess Capacity (Dollars) (1)	Total Incremental Costs for Excess Capacity (Dollars) (2)	Overpayment (+) or Underpayment (-) (Dollars) (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 Overpayment or Underpayment with Interest (c (6)
			Metropolitan Water District of Southern California			
1965	0.0	158,000	(158,000)	3.968%	4.184%	(163,412)
1966	8,056,000	435,800	7,620,200	4.540%	5.057%	7,701,103
1967	9,094,963	1,878,270	7,216,693	4.815%	4.744%	15,524,533
1968	1,523,252	2,887,351	(1,364,099)	5.330%	5.540%	14,959,187
1969	8,310,651	3,059,310	5,251,341	5.946%	6.389%	21,369,973
1970	3,426,736	2,397,102	1,029,634	7.071%	7.125%	23,986,083
1971	1,086,045	1,146,648	(60,603)	5.154%	5.580%	25,238,017
1972	(4,244,807)	487,394	(4,732,201)	4.477%	4.977%	21,532,965
1973	(15,913,829)	25,041	(15,938,870)	6.023%	8.717%	6,014,116
1974	0	37,775	(37,775)	9.222%	10.351%	6,576,393
1975	0	2,085	(2,085)	7.089%	6.791%	7,038,515
1976	0	0	0	6.048%	6.021%	7,469,662
1977	0	0	0	5.788%	6.182%	7,923,403
1978	0	0	0	7.171%	8.096%	8,539,736
1979	0	0	0	8.979%	9.671%	9,354,605
1980	0	0	0	11.500%	11.500%	10,461,314
Total	11,339,011	12,514,776	(1,175,765)	-	-	10,461,314
			San Gabriel Valley Municipal Water District			
1967	0	25,730	(25,730)	4.815%	4.744%	(26,611)
1968	184,422	44,053	140,369	5.330%	5.540%	117,587
1969	49,052	38,075	10,977	5.946%	6.389%	136,751
1970	44,911	17,959	26,952	7.071%	7.125%	175,186
1971	61,588	5,900	55,688	5.154%	5.580%	242,927
1972	(20,263)	6,835	(27,098)	4.477%	4.977%	226,230
1973	(180,465)	0	(180,465)	6.023%	8.717%	49,198
1974	0	0	0	9.222%	10.351%	54,130
1975	0	0	0	7.089%	6.791%	57,952
1976	0	0	0	6.048%	6.021%	61,501
1977	0	0	0	5.788%	6.182%	65,237
1978	0	0	0	7.171%	8.096%	70,312
1979	0	0	0	8.979%	9.671%	77,021
1980	0	0	0	11.500%	11.500%	86,133
Total	139,245	138,552	693	-	-	86,133
			Antelope Valley-East Kern Water Agency			
1968	85,495	1,645	83,850	5.330%	5.540%	86,962
1969	52,625	6,326	46,299	5.946%	6.389%	140,964
1970	101,648	15,076	86,572	7.071%	7.125%	243,222
1971	34,062	11,748	22,314	5.154%	5.580%	279,673
1972	(12,794)	2,018	(14,812)	4.477%	4.977%	277,552
1973	(205,354)	308	(205,662)	6.023%	8.717%	77,288
1974	0	96	(96)	9.222%	10.351%	84,933
1975	0	0	0	7.089%	6.791%	90,929
1976	0	190	(190)	6.048%	6.021%	96,300
1977	0	0	0	5.788%	6.182%	102,150
1978	0	0	0	7.171%	8.096%	110,096
1979	0	0	0	8.979%	9.671%	120,601
1980	0	0	0	11.500%	11.500%	134,869
Total	55,682	37,407	18,275	-	-	134,869

a) Overpayment or underpayment for each calendar year - column (1) minus column (2).
b) Interest rates shown are annual rates. Interest is credited daily at applicable rates on funds deposited in the State's Surplus Money Investment Fund.
c) Amounts shown are end-of-year balances. Interest on overpayments is credited at applicable Surplus Money Investment Fund Interest Rates shown in columns (4) and (5). Interest on underpayments is charged at the 1980 Project Interest Rate of 4.584 percent.

TABLE B-9

Capital Costs of Requested Excess Peaking Capacity

(Dollars)

Reach Number	Annual Required Advance of Funds — Incremental Costs and Advance Payments by Calendar Year												Reach Total
	1965 (7)	1966 (8)	1967 (9)	1968 (10)	1969 (11)	1970 (12)	1971 (13)	1972 (14)	1973 (15)	1974 (16)	1975 (17)	1976 (18)	1981 (19)	(20)
Metropolitan Water District of Southern California														
Incremental Costs														
8C		1,000	1,000											2,000
8D		43,500	43,500											87,000
9		27,000	27,000	13,500										67,500
10A		29,700	29,700	14,800										74,200
11B	10,100	18,300	18,300	9,200										55,900
12D	1,800		19,300	25,800	12,900									59,800
12E	1,800		12,400	18,800	10,800									43,800
13B			12,600	37,800	31,600									82,000
14A	2,500	500	11,100	80,216	107,504	124,069	37,519	6,413	381	87				370,289
14B	1,200	1,800		19,100	19,100	12,800								54,000
14C	1,800	900		13,500	13,500	9,000								38,700
15A	700		14,000	66,947	133,357	128,099	54,821	5,327	946	2,076				406,273
16A	700		18,900	137,894	182,000	211,608	133,927	26,203	5,767	6,156				723,155
17E		51,500	444,600	537,247	860,024	998,985	699,281	193,286	17,947	29,456	2,085			3,834,411
17F	109,100	261,600	261,600	261,600	261,600	239,500								1,395,000
25			964,270	1,650,947	1,426,925	673,041	221,100	256,165						5,192,448
28J		304,612	13,706	296,668	65,966	230,169	1,209,586	2,017,134	235,900	4,900				4,378,641
Total	129,700	740,412	1,891,976	3,184,019	3,125,276	2,627,271	2,356,234	2,504,528	260,941	42,675	2,085			16,865,117
Current Adjustment														
8C through 25	1. Advance Payments Applied to Incremental Costs Amendment 2 (d													
	0	8,056,000	9,094,963	1,523,252	8,310,651	3,426,736	1,086,045	(4,244,807)	(14,381,396)				(356,668)	12,514,776
	2. Interest Credits-Amendment 2 (e													
28J									(1,532,433)				(10,104,646)	(11,637,079)
	3. Advance Payments Applied to Incremental Costs Amendment 5 (f													
	0	1,240,000	1,483,180	2,469,325	(927,035)	1,729,160	3,215,258	2,967,475	1,690,000	(9,488,722)				4,378,641
	4. Interest Credits-Amendment 5 (g													
										(2,721,803)				(2,721,803)
	5. Net Required Advance of Funds													
	0	9,296,000	10,578,143	3,992,577	7,383,616	5,155,896	4,301,303	(1,277,332)	(14,233,829)	(12,210,525)			(10,461,314)	2,524,535
San Gabriel Valley Municipal Water District														
Incremental Costs														
25			25,730	44,053	38,075	17,959	5,900	6,835						138,552
	Total Unadjusted Incremental Costs for Past Payments													
			25,730	44,053	38,075	17,959	5,900	6,835						138,552
Current Adjustment														
	1. Advance Payments Applied to Incremental Costs (d													
			0	184,422	49,052	44,911	61,588	(20,263)	(174,133)				(7,025)	138,552
	2. Interest Credit													
									(6,332)				(79,108)	(85,440)
	3. Net Required Advance of Funds													
			0	184,422	49,052	44,911	61,588	(20,263)	(180,465)				(h (86,133)	53,112
Antelope Valley-East Kern Water Agency														
Incremental Costs														
29A				1,645	6,326	13,376	10,048	2,018	308	96		190		34,007
29F						1,700	1,700							3,400
	Total Unadjusted Incremental Costs for Past Payments													
				1,645	6,326	15,076	11,748	2,018	308	96		190		37,407
Current Adjustment														
	1. Advance Payments Applied to Incremental Costs (d													
				85,495	52,625	101,648	34,062	(12,794)	(189,120)	0		0	(34,509)	37,407
	2. Interest Credit													
									(16,234)				(100,360)	(116,594)
	3. Net Required Advance of Funds												(h	
				85,495	52,625	101,648	34,062	(12,794)	(205,354)	0		0	(134,869)	(79,187)

d) Actual payments are shown for 1965 through 1976 with 1981 adjusted to reflect overpayments and underpayments without interest for prior years.
e) Interest for overpayments and underpayments under provisions of Amendment 2 of the contract.
f) Actual payments are shown for 1965 through 1973 with 1974 adjusted to reflect overpayments and underpayments without interest for prior years.
g) Interest for overpayments and underpayments under provisions of Amendment 5 of the contract.
h) Amounts in excess of incremental costs, under the provisions of the contract, reduce the Transportation Charge capital cost component of the Agency's Statement of Charges for January 1981.

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	Upper Feather Division (1)	North Bay Aqueduct					South Bay Aqueduct			
		Reach 1 (2)	Reach 2 (3)	Reach 3A (4)	Reach 3B (5)	Total (6)	Reach 1 (7)	Reach 2 (8)	Reach 4 (9)	Reach 5 (10)
1952	0	0	0	0	0	0	97	34	30	57
1953	0	0	0	0	0	0	477	166	144	297
1954	0	0	0	0	0	0	1,466	508	437	959
1955	0	0	0	0	0	0	1,944	674	560	1,266
1956	0	0	0	0	0	0	18,789	6,515	5,090	12,545
1957	0	13,290	3,391	0	9,953	26,634	45,090	15,639	12,285	33,218
1958	2	19,202	5,011	0	25,798	50,011	195,985	80,961	7,714	21,930
1959	14	7,517	2,118	0	17,653	27,288	496,140	148,516	24,945	17,118
1960	28	8,797	4,292	0	4,838	17,927	1,130,378	67,351	71,779	68,028
1961	10	1,551	10,318	0	2,526	14,395	3,273,247	180,596	307,885	74,398
1962	32	217	(1,751)	0	414	(1,120)	1,548,884	203,535	695,446	35,102
1963	51	2,510	(1,063)	0	983	2,430	480,716	69,182	2,284,291	206,587
1964	7,791	39,879	12,046	0	21,934	73,859	2,549,118	15,903	181,900	264,410
1965	3,139	72,793	17,900	0	170,361	261,054	807,505	153,454	85,425	447,830
1966	(48)	59,615	12,972	0	438,949	511,536	898,074	149,529	142,096	1,690,200
1967	47	47,257	11,597	0	1,551,023	1,609,877	607,614	50,423	293,304	3,496,284
1968	51,573	70,586	19,560	0	831,158	921,304	965,119	19,543	89,300	2,931,101
1969	234,232	63,650	23,628	0	46,428	133,706	455,173	9,618	3,860	896,727
1970	16,227	59,090	42,733	0	9,415	111,238	52,481	3,380	10,517	154,358
1971	27,204	20,819	31,516	0	8,480	60,815	24,505	4,645	5,035	20,395
1972	9	15,538	12,952	0	10,058	38,548	26,918	825	2,945	26,090
1973	25	18,488	29,018	0	39,878	87,384	24,468	4,010	6,016	12,708
1974	45	67,352	29,978	0	134,332	231,662	17,108	1,192	1,765	65,587
1975	21	62,855	73,112	0	45,091	181,058	57,619	561	1,165	7,291
1976	51	52,419	75,611	218	13,168	141,416	104,242	2,846	8,915	12,701
1977	28	53,274	65,662	2,240	23,138	144,314	176,062	3,625	3,225	16,158
1978	38	61,936	57,158	2,955	28,987	151,036	264,581	4,494	3,668	14,028
1979	23	316,620	91,367	3,953	62,240	474,180	111,106	17,151	8,515	31,725
1980	26	422,804	111,600	19,910	96,125	650,439	368,942	17,708	8,249	38,045
1981	34	430,992	147,295	(10,752)	43,157	610,692	(145,428)	3,600	6,533	12,448
1982	11	934,812	357,720	(7,165)	134,408	1,419,775	(44,778)	18,971	7,451	37,824
1983	19	1,091,091	1,076,627	2,628	517,615	2,687,961	429,225	73,925	38,185	72,415
1984	26	1,875,968	2,317,661	3,290	1,068,363	5,265,282	506,951	36,354	9,610	92,846
1985	29	2,248,491	7,849,886	27,815	3,416,370	13,542,562	34,103	2,822	5,034	27,138
1986	31	16,420,238	10,020,277	1,309,599	1,819,349	29,569,463	85,732	14,715	17,144	13,982
1987	32	11,873,772	7,214,307	1,628,901	1,670,596	22,387,576	126,377	15,693	27,881	32,931
1988	55	3,287,174	1,648,269	1,013,270	686,824	6,635,537	290,538	36,748	51,790	25,081
1989	45	1,056,595	950,991	271,627	374,933	2,654,146	131,153	16,911	35,610	12,690
1990	63	493,761	537,947	215,952	71,886	1,319,546	251,649	29,974	97,900	39,268
1991	54	76,915	17,229	32,679	70,724	197,547	1,153,930	27,001	53,798	22,783
1992	42	57,788	7,136	32,063	38,302	135,289	407,958	53,805	62,940	54,688
1993	29	104,585	24,717	91,913	82,072	303,287	315,733	55,965	79,559	40,733
1994	11	69,503	13,678	118,890	47,046	249,117	(208,944)	29,384	363,091	37,347
1995	16	38,368	7,399	61,001	31,438	138,206	277,293	44,539	49,178	30,167
1996	0	84,000	4,000	0	54,000	142,000	13,000	5,000	7,000	4,284
1997	0	471,000	4,000	0	221,000	696,000	11,000	5,000	6,000	4,032
1998	0	1,375,000	1,000	0	2,000	1,378,000	8,000	4,000	3,000	4,032
1999	0	10,055	0	0	0	10,055	3,868	2,000	0	2,016
2000	0	109	0	0	0	109	1,737	0	0	0
2001	0	109	0	0	0	109	1,737	0	0	0
2002	0	109	0	0	0	109	1,737	0	0	0
2003	0	0	0	0	0	0	0	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	341,065	43,558,494	32,940,865	4,820,987	13,942,013	95,263,359	18,356,419	1,708,991	5,188,210	11,163,848

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	5,707	6,690	7,605	33,731	457,890	2,898,235	(128,038)	(56,443)	2,713,754
1989	2,652	3,890	4,770	14,582	222,258	6,900,497	346,907	174,135	7,421,539
1990	5,089	19,900	36,620	86,652	567,052	13,452,379	112,108	2,410,601	15,975,088
1991	1,963	5,165	7,493	31,992	1,304,125	13,917,576	134,372	115,662	14,167,610
1992	1,300	2,374	2,777	36,467	622,309	6,280,944	245,972	242,697	6,769,613
1993	3,650	6,124	9,071	42,560	553,395	2,551,693	258,898	201,600	3,012,191
1994	2,946	4,876	5,506	90,364	324,570	1,563,528	151,925	90,506	1,805,959
1995	11,045	4,897	15,359	28,370	460,848	1,703,076	232,553	139,071	2,074,700
1996	1,000	2,000	5,000	8,000	45,284	905,828	24,662	8,665	939,155
1997	0	2,000	4,000	8,000	40,032	3,349,364	22,662	7,998	3,380,024
1998	0	1,000	2,000	3,000	25,032	2,397,544	11,998	4,666	2,414,208
1999	0	0	0	0	7,884	1,679,510	2,666	1,333	1,683,509
2000	0	0	0	0	1,737	12,991	0	0	12,991
2001	0	0	0	0	1,737	12,991	0	0	12,991
2002	0	0	0	0	1,737	12,991	0	0	12,991
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	557,381	3,876,422	4,917,120	8,952,128	54,720,519	113,807,610	42,162,724	23,114,264	179,084,598

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)								
	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	(149,379)	224,204	(406,387)	(137,348)	923,644	454,734	9,834	(119,733)	(60,632)
1989	39,808	595,891	233,086	80,208	576,658	1,525,651	5,309	91,628	278,188
1990	24,075	235,985	76,536	28,175	448,102	812,873	5,784	41,199	2,012,394
1991	4,916,685	399,681	99,844	36,195	512,867	5,965,272	4,625	43,571	41,680
1992	(754,157)	562,040	215,976	77,133	406,113	507,105	3,856	105,165	110,744
1993	111,301	732,558	187,855	72,122	725,012	1,828,848	15,115	101,924	91,458
1994	1,370,573	788,875	110,872	43,222	1,027,641	3,341,183	6,868	43,262	41,486
1995	295,799	626,279	146,563	65,729	1,987,960	3,122,330	12,953	56,796	50,495
1996	12,693	36,777	23,575	8,487	12,259	93,791	943	10,373	8,487
1997	11,283	32,062	21,689	7,544	11,316	83,894	943	9,430	8,487
1998	6,347	24,518	10,373	3,772	5,658	50,668	943	4,715	3,772
1999	1,410	8,487	1,886	943	943	13,669	0	943	943
2000	0	0	0	0	0	0	0	0	0
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	20,829,588	30,874,541	22,406,344	5,833,569	36,574,593	116,518,635	828,691	12,891,266	10,962,333

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	(159,351)	(73,645)	(151,036)	(51,396)	(120,096)	161,118	(75,271)	(75,303)	144,410
1989	70,313	65,313	63,456	121,044	73,130	2,779,702	119,696	36,765	2,952,879
1990	32,799	27,329	25,378	45,012	34,159	621,436	42,185	14,597	475,902
1991	37,260	32,591	30,490	55,417	34,641	425,484	50,709	12,401	449,529
1992	105,185	101,106	99,041	193,891	99,983	1,003,561	187,122	10,276	461,649
1993	91,093	70,558	63,392	118,951	81,325	692,256	110,559	39,284	1,000,508
1994	66,301	29,902	27,487	51,338	36,106	405,447	45,738	17,718	686,606
1995	445,746	36,877	29,917	56,456	47,733	542,732	57,809	31,500	551,980
1996	10,373	5,658	7,544	6,601	7,544	23,575	6,601	5,658	16,031
1997	9,430	5,658	7,544	5,658	7,544	19,803	6,601	4,715	13,202
1998	4,715	2,829	2,829	2,829	3,772	16,031	3,772	2,829	12,259
1999	943	943	0	943	943	5,658	943	943	5,658
2000	0	0	0	0	0	0	0	0	0
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	9,856,362	12,459,109	11,126,295	8,090,809	15,956,141	64,092,113	8,971,111	7,077,053	45,716,394

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 (continued)		Tehachapi Division			Mojave Division			
	Reach 16A (38)	Subtotal (39)	Reach 17E (40)	Reach 17F (41)	Subtotal (42)	Reach 18A (43)	Reach 19 (44)	Reach 19C (45)	Reach 20A (46)
1952	4,440	16,030	9,703	4,072	13,775	4,090	1,520	0	2,561
1953	16,513	59,323	31,337	13,284	44,621	12,610	4,685	0	7,246
1954	16,601	60,328	46,243	20,010	66,253	16,642	6,184	0	9,506
1955	5,223	19,612	25,880	11,362	37,242	5,612	2,086	0	2,529
1956	21,754	82,940	47,487	17,609	65,096	6,038	2,244	0	2,440
1957	62,657	237,073	119,673	49,130	168,803	22,348	8,304	0	9,035
1958	133,083	537,575	164,056	72,091	236,147	37,917	14,166	123	15,391
1959	205,748	773,179	151,389	57,883	209,272	38,620	23,450	1,102	23,605
1960	204,788	774,678	203,222	45,323	248,545	21,356	26,093	5,318	40,523
1961	206,305	1,148,969	387,819	85,558	473,377	35,664	32,281	2,262	34,918
1962	171,396	1,127,293	353,119	82,610	435,729	68,508	266,284	1,841	10,323
1963	481,941	1,913,123	1,191,633	124,757	1,316,390	37,379	435,881	4,137	39,706
1964	1,778,952	5,834,889	1,866,000	775,005	2,641,005	95,693	706,369	8,564	43,342
1965	1,268,176	13,733,092	2,574,824	2,284,869	4,859,693	121,060	716,092	9,156	108,519
1966	2,896,274	27,347,168	5,537,412	9,323,517	14,860,929	366,116	1,644,699	13,373	159,282
1967	3,442,021	30,089,234	26,239,390	12,398,708	38,638,098	1,312,022	903,880	24,103	645,078
1968	7,578,498	48,226,583	33,363,479	7,416,464	40,779,943	136,804	7,109,653	71,388	1,889,601
1969	13,136,056	45,702,910	40,368,425	6,883,206	47,251,631	213,805	2,465,641	7,423	5,939,151
1970	13,890,751	36,322,845	35,446,706	6,786,231	42,232,937	2,211,077	1,210,665	6,217	3,652,478
1971	7,903,937	14,885,415	20,141,395	6,835,303	26,976,698	1,496,843	284,738	6,994	1,074,759
1972	3,025,555	5,783,019	10,002,935	34,791	10,037,726	129,417	409,903	3,620	471,963
1973	1,472,313	3,096,609	3,090,140	36,207	3,126,347	23,931	75,638	2,539	88,416
1974	1,031,843	2,546,984	4,798,348	152,494	4,950,842	28,399	205,581	2,703	138,673
1975	489,545	1,289,211	2,144,178	411,404	2,555,582	44,774	70,652	5,066	68,157
1976	618,049	2,154,103	1,124,357	174,629	1,298,986	121,043	84,593	6,786	59,967
1977	580,209	1,673,525	655,047	31,512	686,559	261,400	133,767	7,521	117,878
1978	582,775	1,428,409	1,900,843	27,956	1,928,799	553,014	57,150	5,872	51,615
1979	542,554	1,182,702	2,099,385	61,381	2,160,766	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	54,431	4,684	623,872
1988	262,392	(308,709)	1,408,882	(49,733)	1,359,149	848,019	(84,477)	13,409	(64,069)
1989	5,956,367	12,613,790	506,969	64,706	571,675	377,336	232,440	50,954	150,430
1990	544,769	3,922,943	756,491	26,297	782,788	200,267	(377,867)	35,292	(585,641)
1991	682,503	1,900,901	699,386	34,851	734,237	273,772	61,879	81,605	(164,650)
1992	681,720	3,163,299	776,821	26,722	803,543	624,959	420,846	86,653	230,090
1993	808,115	3,284,538	1,235,667	35,556	1,271,223	1,133,335	268,946	72,748	112,757
1994	501,336	1,959,595	815,143	17,114	832,257	997,201	166,354	60,149	53,174
1995	588,903	2,509,897	1,611,059	24,475	1,635,534	396,822	167,905	48,035	96,503
1996	28,290	137,678	34,891	3,772	38,663	1,886	10,373	0	8,487
1997	23,575	122,590	28,290	2,829	31,119	1,886	10,373	0	8,487
1998	18,860	80,155	26,404	1,886	28,290	943	3,772	0	3,772
1999	7,544	26,404	19,532	0	19,532	943	943	0	943
2000	0	0	14,548	0	14,548	0	0	0	0
2001	0	0	14,548	0	14,548	0	0	0	0
2002	0	0	14,548	0	14,548	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	72,021,167	280,048,844	243,073,397	54,522,874	297,596,271	50,467,614	23,795,469	686,356	18,250,494

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	Mojave Division (continued)							Santa Ana Division	
	Reach 20B (47)	Reach 21 (48)	Reach 22A (49)	Reach 22B (50)	Reach 23 (51)	Reach 24 (52)	Subtotal (53)	Reach 25 (54)	Reach 26A (55)
1952	892	5,788	35	2,013	2,074	2,413	21,386	3,334	5,599
1953	3,402	17,846	71	5,752	6,886	7,438	65,936	10,275	17,264
1954	4,548	23,558	369	8,560	7,849	9,820	87,036	13,566	22,790
1955	2,213	7,947	178	2,754	2,725	3,313	29,357	4,575	7,687
1956	2,655	8,542	216	2,905	2,961	3,561	31,562	4,917	8,264
1957	9,826	31,616	800	10,757	10,962	13,177	116,825	18,205	30,586
1958	16,752	53,569	1,397	18,717	18,578	22,627	199,237	31,001	52,019
1959	18,604	56,724	1,844	25,421	20,372	45,646	255,388	39,325	58,137
1960	37,179	43,893	11,029	136,751	17,152	109,816	449,110	65,655	93,700
1961	37,102	21,532	14,517	215,859	9,546	373,473	777,154	26,979	56,734
1962	10,730	8,197	4,186	164,168	4,336	279,421	817,994	9,964	36,235
1963	40,865	26,670	17,081	237,695	7,228	358,503	1,205,145	31,013	112,271
1964	71,116	33,912	22,793	262,996	6,863	244,003	1,495,651	69,669	202,642
1965	343,506	91,095	65,689	827,655	11,836	621,566	2,916,174	279,237	206,356
1966	1,311,628	160,388	178,538	1,746,245	31,078	1,018,628	6,629,975	415,066	364,004
1967	1,718,942	498,257	367,961	3,146,128	62,135	2,331,106	11,009,612	3,184,296	638,539
1968	2,291,691	1,141,929	1,145,768	4,588,850	102,207	2,600,293	21,078,184	8,264,126	1,268,194
1969	5,626,284	2,358,737	1,515,147	7,750,478	260,659	11,131,406	37,268,731	6,807,783	1,768,456
1970	5,304,372	3,232,911	2,081,810	23,451,612	1,240,798	16,885,193	59,277,133	2,169,051	7,229,429
1971	1,091,123	825,070	432,464	16,772,680	1,922,115	5,385,721	29,292,507	1,135,248	9,811,736
1972	635,507	484,772	324,865	3,788,894	48,049	788,479	7,085,469	1,095,740	5,528,987
1973	83,840	63,774	36,179	1,623,274	24,333	4,225,877	6,247,801	136,994	1,810,729
1974	118,639	103,545	54,198	5,699,605	130,567	766,562	7,248,472	68,180	1,922,999
1975	169,294	167,240	19,453	4,793,580	19,467	373,783	5,731,466	166,653	3,787,797
1976	102,909	44,896	24,732	3,103,916	84,188	204,705	3,837,735	475,176	1,494,750
1977	120,160	71,389	49,445	1,654,122	60,112	232,230	2,708,024	76,255	776,085
1978	68,838	32,855	18,183	677,448	36,484	210,198	1,711,657	57,463	131,076
1979	36,225	18,948	10,675	560,506	10,634	103,615	1,761,339	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	2,199,973	58,989	13,951,622	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	666,702	974,482	51,634	8,643,591	5,555	97,740
1986	(1,918,884)	(1,245,542)	3,328,851	1,209,608	235,587	51,994	8,595,441	9,927	233,121
1987	(306,867)	78,262	66,943	4,583,310	161,155	91,223	6,705,362	4,908	262,960
1988	(48,671)	44,811	353,772	1,330,113	600,276	197,774	3,190,957	7,359	1,042,702
1989	184,718	173,398	538,186	4,813,691	1,575,992	433,434	8,530,579	8,102	1,057,663
1990	(394,031)	(585,076)	(86,730)	9,909,254	1,564,408	344,794	10,024,670	177,480	1,977,897
1991	848	(122,971)	(11,738)	9,168,597	3,980,848	140,669	13,408,859	203,039	3,533,022
1992	342,156	(260,470)	76,281	5,413,702	9,258,120	133,394	16,325,731	335,052	638,140
1993	182,125	135,021	49,359	2,233,628	17,440,344	161,220	21,789,483	1,506,801	30,458,496
1994	115,728	67,106	27,004	984,359	8,645,331	83,635	11,200,041	2,088,787	21,872,743
1995	124,572	79,030	34,426	1,120,420	4,861,572	133,544	7,062,829	3,383,221	4,690,029
1996	7,544	4,715	3,772	426,236	2,299,034	7,544	2,769,591	20,068,926	13,202
1997	6,601	4,715	2,829	61,295	928,855	5,658	1,030,699	5,113,889	10,373
1998	2,829	2,829	1,886	24,518	5,658	4,715	50,922	943	9,430
1999	943	943	0	9,430	943	1,886	16,974	0	4,715
2000	0	0	0	0	0	0	0	0	0
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	17,865,751	8,611,547	12,928,523	125,544,077	60,926,788	51,133,167	370,209,786	57,658,399	104,634,948

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	Santa Ana Division (continued)				West Branch				
Calendar Year	Reach 28G (a (56)	Reach 28H (57)	Reach 28J (58)	Subtotal (59)	Reach 29A (60)	Reach 29F (61)	Reach 29G (62)	Reach 29H (63)	Reach 29J (64)
1952	4,785	4,055	3,020	20,793	2,924	136	175	459	553
1953	15,580	11,511	9,476	64,106	9,093	344	237	1,754	1,683
1954	18,015	18,100	12,160	84,631	7,389	1,201	2,229	2,350	4,162
1955	6,052	6,081	4,151	28,546	1,019	585	1,086	1,147	2,029
1956	6,496	6,525	4,480	30,682	490	698	1,297	1,366	2,420
1957	24,044	24,156	16,585	113,576	1,809	2,583	4,792	5,057	8,952
1958	40,844	41,033	28,470	193,367	3,256	4,516	8,714	8,878	15,847
1959	45,746	45,946	44,331	233,485	7,953	9,150	19,414	18,243	35,583
1960	59,102	58,548	118,969	395,974	21,753	14,990	34,447	29,764	69,752
1961	32,226	34,382	674,787	825,108	22,442	12,775	21,559	20,086	39,761
1962	21,383	20,530	47,484	135,596	40,237	28,729	86,938	58,215	108,962
1963	43,884	41,698	1,506,440	1,735,306	91,959	69,162	163,347	110,015	211,592
1964	89,710	45,762	98,569	506,352	150,670	66,420	207,977	143,340	291,404
1965	96,956	76,899	146,095	805,543	361,811	77,914	403,115	127,430	589,638
1966	170,878	308,756	589,107	1,847,811	489,512	203,497	1,233,640	348,918	3,231,797
1967	233,968	283,126	987,832	5,327,761	1,589,715	882,096	1,117,243	891,607	31,088,491
1968	871,337	266,295	780,587	11,450,539	3,899,363	300,921	396,190	1,104,832	36,157,768
1969	1,117,873	1,444,654	756,442	11,895,208	6,592,580	336,480	693,348	1,184,454	9,655,871
1970	1,843,621	1,013,468	2,829,523	15,085,092	7,986,733	6,089,401	2,624,747	3,002,968	8,463,475
1971	16,095,702	6,401,303	12,111,623	45,555,612	4,247,037	3,768,699	1,120,231	8,244,651	5,844,024
1972	1,537,880	11,960,791	21,542,747	41,666,145	1,871,831	426,932	985,512	18,787,722	(23,015,734)
1973	209,664	247,769	3,673,344	6,078,500	775,824	168,064	399,856	9,408,706	1,821,206
1974	162,178	101,638	1,980,991	4,235,986	560,657	168,878	169,717	3,901,261	(3,454,239)
1975	157,365	124,399	1,626,274	5,862,488	353,670	421,176	925,693	664,113	609,891
1976	178,287	118,748	1,497,465	3,764,426	396,809	650,417	1,274,484	706,244	650,209
1977	127,106	89,036	323,091	1,391,573	390,637	3,018,637	2,152,961	196,012	1,135,148
1978	147,112	153,867	347,482	837,000	1,427,190	2,219,135	6,694,615	57,817	149,932
1979	29,723	19,225	225,947	385,337	940,013	2,168,382	19,813,742	597,858	331,313
1980	137,833	154,821	1,077,900	1,583,654	1,276,793	4,108,143	24,537,814	550,337	204,751
1981	28,815	22,654	61,349	187,713	(711,751)	2,699,873	19,806,531	94,944	28,852
1982	16,069	58,900	55,841	299,314	(465,217)	351,251	17,964,617	215,678	42,587
1983	18,213	89,581	(264,804)	376,058	100,394	180,971	6,751,649	220,150	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	142,027	36,149
1987	17,141	8,005	45,528	338,542	13,936	453,949	711,773	192,643	27,931
1988	41,896	21,116	90,798	1,203,871	427,589	118,014	1,660,980	203,286	95,941
1989	28,791	12,678	51,892	1,159,126	207,872	430,765	584,992	242,221	97,542
1990	27,608	13,171	56,153	2,252,309	195,900	312,447	365,234	813,848	56,341
1991	142,810	16,165	64,621	3,959,657	220,726	345,174	456,401	1,134,180	57,900
1992	36,167	15,041	74,981	1,099,381	550,613	297,231	475,467	4,407,059	51,598
1993	44,818	27,414	164,548	32,202,077	468,637	320,760	647,833	3,361,999	74,076
1994	16,715	11,948	55,810	24,046,003	207,103	232,550	365,697	306,638	34,075
1995	39,951	30,254	174,429	8,317,884	363,312	397,375	703,209	482,460	42,390
1996	7,544	8,487	12,259	20,110,418	15,088	5,658	581,831	11,316	5,658
1997	7,544	7,544	9,430	5,148,780	12,259	4,715	12,217,508	8,487	4,715
1998	2,829	2,829	8,487	24,518	11,316	2,829	3,772	7,544	2,829
1999	943	0	4,715	10,373	5,658	943	1,886	3,772	943
2000	0	0	0	0	0	0	0	0	0
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	24,067,046	23,517,686	53,921,820	263,799,899	35,492,521	31,531,176	133,666,089	62,462,164	74,979,319

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)								Grand Total (73)
	West Branch (continued)		Coastal Branch					Total (72)	
	Reach 30 (65)	Subtotal (66)	Reach 31A (67)	Reach 33A (68)	Reach 34 (69)	Reach 35 (70)	Subtotal (71)		
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	763,445	11,312,134	52,994	83,300	1,302	3,852	141,448	18,661,117	19,119,151
1979	282,145	24,133,453	38,182	108,951	1,505	4,433	153,071	31,208,787	31,864,031
1980	2,055,206	32,733,044	189,070	376,035	1,153	3,448	569,706	73,906,718	75,002,450
1981	275,460	22,193,909	19,897	(157,537)	1,428	4,260	(131,952)	15,285,012	15,781,136
1982	351,376	18,460,292	(16,381)	(96,449)	589	1,787	(110,454)	38,432,653	39,882,004
1983	566,630	7,844,089	85,496	67,106	795	2,398	155,795	35,005,420	38,344,788
1984	1,118,954	4,483,129	28,568	54,074	988	2,959	86,589	24,649,667	30,577,826
1985	284,243	2,702,880	36,834	54,316	2,111	6,266	99,527	15,170,968	28,793,594
1986	213,447	862,491	82,358	223,133	17,458	51,280	374,229	14,438,700	44,159,177
1987	158,406	1,558,638	53,817	1,061,939	92,505	272,969	1,481,230	13,099,965	35,720,434
1988	222,179	2,727,989	183,886	1,141,073	99,440	293,559	1,717,958	13,059,703	20,153,185
1989	149,202	1,712,594	85,202	893,444	77,254	227,945	1,283,845	34,818,799	37,695,248
1990	121,496	1,865,266	127,240	1,092,422	103,864	278,155	1,601,681	37,237,618	39,124,279
1991	233,360	2,447,741	165,464	1,636,300	123,690	364,187	2,289,641	44,873,918	46,375,644
1992	215,387	5,997,355	189,153	3,076,218	176,672	478,141	3,920,184	38,586,211	39,343,851
1993	298,200	5,171,505	346,998	10,810,280	1,065,482	631,126	12,853,886	81,413,751	82,270,462
1994	169,214	1,315,277	174,171	44,301,550	4,481,197	2,366,495	51,323,413	95,823,728	96,397,426
1995	317,766	2,306,512	328,014	106,318,895	9,959,246	9,685,807	126,291,962	153,321,648	153,920,718
1996	23,575	643,126	80,000	2,927,149	62,000,007	7,832,453	72,839,609	97,572,031	97,759,315
1997	20,746	12,268,430	117,000	1,244,139	406,080	377,166	2,144,385	24,209,921	24,945,953
1998	18,860	47,150	112,000	626,776	251,257	13,470	1,003,503	3,699,414	5,102,446
1999	8,487	21,689	104,000	264,863	107,682	0	476,545	2,268,695	2,286,634
2000	0	0	68,000	88,288	35,894	0	192,182	219,721	221,567
2001	0	0	36,000	58,858	23,929	0	118,787	146,326	148,172
2002	0	0	36,000	0	0	0	36,000	63,539	65,385
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	135,591,747	473,723,016	17,713,609	176,904,688	79,072,914	23,003,615	296,694,826	2,227,675,875	2,428,000,818

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	Upper Feather Division (1)	North Bay Aqueduct					South Bay Aqueduct			
		Reach 1 (2)	Reach 2 (3)	Reach 3A (4)	Reach 3B (5)	Total (6)	Reach 1 (7)	Reach 2 (8)	Reach 4 (9)	Reach 5 (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	37,396	5,522	0	0
1963	0	0	0	0	0	0	147,719	20,639	0	0
1964	0	0	0	0	0	0	149,750	15,574	19,405	0
1965	0	0	0	0	0	0	259,939	45,718	46,485	0
1966	0	0	0	0	0	0	270,890	23,799	63,921	0
1967	0	0	0	0	0	0	438,050	32,798	108,127	0
1968	0	0	0	0	130	130	410,919	44,277	66,973	706
1969	0	0	0	0	80,875	80,875	487,377	48,339	75,644	706
1970	0	0	0	0	94,872	94,872	381,734	44,852	64,833	71,376
1971	54	0	0	0	45,579	45,579	357,850	25,666	50,344	38,735
1972	40	0	0	0	37,895	37,895	347,941	30,606	56,800	100,106
1973	1	0	0	0	32,993	32,993	386,897	36,172	58,288	28,810
1974	143	0	0	0	46,498	46,498	456,381	57,081	83,120	61,623
1975	1,069	0	0	0	37,707	37,707	624,989	46,111	81,361	36,682
1976	139	0	0	0	60,786	60,786	614,362	47,862	123,838	91,096
1977	892	0	0	0	78,400	78,400	511,065	48,926	104,280	102,083
1978	39	0	0	0	56,318	56,318	671,195	125,224	176,855	50,289
1979	3,235	0	0	0	73,852	73,852	650,826	76,849	212,826	91,380
1980	416	0	0	0	81,770	81,770	1,128,863	212,974	242,118	110,792
1981	3,847	0	0	0	100,779	100,779	882,727	130,127	167,121	204,787
1982	10,956	0	0	0	191,985	191,985	1,156,559	141,702	249,398	116,675
1983	(422)	0	0	0	80,218	80,218	1,258,227	84,370	373,905	151,861
1984	643	0	0	0	139,082	139,082	1,998,456	113,797	340,347	34,457
1985	2,599	0	0	0	259,561	259,561	2,044,693	207,479	427,930	247,387
1986	2,595	0	0	0	229,424	229,424	1,833,723	285,914	305,164	158,996
1987	2,595	0	0	0	309,138	309,138	2,097,384	163,720	400,565	282,226
1988	2,600	0	0	0	329,727	329,727	2,072,074	186,324	300,007	369,654
1989	2,672	467,483	178,186	233,909	371,179	1,250,757	2,160,357	163,552	320,847	495,243
1990	2,687	548,678	244,901	120,244	423,365	1,337,188	2,212,250	251,429	355,006	565,946
1991	2,730	645,669	302,488	203,317	425,411	1,576,885	1,788,152	152,474	95,708	92,087
1992	2,774	441,697	189,357	264,417	279,772	1,175,243	2,471,451	450,675	505,609	504,023
1993	2,529	431,909	224,755	211,535	285,743	1,153,942	3,954,709	632,825	504,445	432,336
1994	3,058	405,665	196,054	198,467	337,590	1,137,776	4,675,221	296,849	400,081	393,671
1995	3,210	423,842	263,202	161,873	303,799	1,152,716	3,745,266	309,198	522,402	342,824
1996	3,370	896,157	236,796	411,761	359,674	1,904,388	3,638,761	408,106	571,447	515,721
1997	3,538	915,884	243,106	393,777	369,173	1,921,940	3,643,578	402,958	601,354	527,872
1998	3,538	894,117	239,939	417,638	357,235	1,908,929	3,473,342	406,689	632,423	556,420
1999	3,538	885,355	247,035	429,040	366,461	1,927,891	3,567,029	418,639	650,950	579,284
2000	3,538	887,599	247,044	430,215	367,060	1,931,918	3,568,971	418,834	651,495	582,315
2001	3,538	889,475	247,068	431,188	367,574	1,935,305	3,570,570	418,986	651,922	584,123
2002	3,538	889,816	247,069	431,366	367,665	1,935,916	3,570,867	419,016	652,006	584,537
2003	3,538	889,983	247,070	431,454	367,709	1,936,216	3,571,012	419,031	652,046	584,740
2004	3,538	890,195	247,070	431,566	367,766	1,936,597	3,571,196	419,050	652,098	584,995
2005	3,538	889,181	247,064	431,036	367,491	1,934,772	3,570,319	418,960	651,846	583,752
2006	3,538	889,275	247,064	431,086	367,515	1,934,940	3,570,400	418,968	651,870	583,864
2007	3,538	889,416	247,064	431,159	367,552	1,935,191	3,570,523	418,980	651,903	584,033
2008	3,538	889,544	247,064	431,226	367,585	1,935,419	3,570,634	418,991	651,935	584,188
2009	3,538	889,675	247,064	431,296	367,620	1,935,655	3,570,747	419,003	651,966	584,346
2010	3,538	889,825	247,064	431,374	367,658	1,935,921	3,570,877	419,014	652,001	584,516
2011	3,538	889,929	247,061	431,431	367,684	1,936,105	3,570,934	419,019	652,020	584,641
2012	3,538	890,058	247,061	431,498	367,717	1,936,334	3,571,047	419,030	652,051	584,797
2013	3,538	890,421	247,063	431,688	367,813	1,936,985	3,571,359	419,062	652,140	585,233
2014	3,538	890,593	247,063	431,779	367,858	1,937,293	3,571,507	419,073	652,173	585,396
2015	3,538	890,707	247,063	431,839	367,889	1,937,498	3,571,608	419,086	652,209	585,576
2016	3,538	890,671	247,061	431,820	367,878	1,937,430	3,571,578	419,083	652,201	585,534
2017	3,538	890,692	247,061	431,831	367,883	1,937,467	3,571,598	419,086	652,206	585,562
2018	3,538	890,725	247,061	431,849	367,890	1,937,525	3,571,625	419,088	652,214	585,602
2019	3,538	890,725	247,060	431,849	367,890	1,937,524	3,571,627	419,088	652,214	585,603
2020	3,538	890,732	247,059	431,853	367,892	1,937,536	3,571,633	419,088	652,215	585,609
2021	3,538	890,433	247,058	431,697	367,811	1,936,999	3,571,374	419,063	652,143	585,249
2022	3,538	890,429	247,058	431,695	367,810	1,936,992	3,571,372	419,063	652,142	585,245
2023	3,538	890,422	247,058	431,691	367,808	1,936,979	3,571,366	419,062	652,140	585,237
2024	3,538	890,425	247,058	431,693	367,809	1,936,985	3,571,368	419,062	652,141	585,239
2025	3,538	890,407	247,058	431,683	367,803	1,936,951	3,571,353	419,060	652,136	585,218
2026	3,538	890,387	247,058	431,673	367,798	1,936,916	3,571,335	419,059	652,132	585,195
2027	3,538	890,379	247,058	431,669	367,796	1,936,902	3,571,328	419,058	652,129	585,184
2028	3,538	890,227	247,057	431,589	367,756	1,936,629	3,571,196	419,045	652,093	585,001
2029	3,538	890,226	247,057	431,589	367,756	1,936,628	3,571,196	419,045	652,093	585,001
2030	3,538	890,240	247,057	431,596	367,759	1,936,652	3,571,208	419,046	652,096	585,019
2031	3,538	890,213	247,057	431,582	367,752	1,936,604	3,571,184	419,044	652,088	584,981
2032	3,538	890,214	247,057	431,583	367,753	1,936,607	3,571,186	419,044	652,090	584,984
2033	3,538	890,219	247,057	431,585	367,754	1,936,615	3,571,189	419,044	652,090	584,989
2034	3,538	890,211	247,057	431,581	367,752	1,936,601	3,571,183	419,044	652,088	584,978
2035	3,538	890,251	247,057	431,601	367,762	1,936,671	3,571,217	419,047	652,098	585,029
TOTAL	192,453	39,000,376	11,459,999	18,580,888	19,485,259	88,526,522	185,567,789	21,281,138	32,834,357	28,411,365

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	South Bay Aqueduct (continued)					California Aqueduct North San Joaquin Division			
	Reach 6 (11)	Reach 7 (12)	Reach 8 (13)	Reach 9 (14)	Total (15)	Reach 1 (16)	Reach 2A (17)	Reach 2B (18)	Subtotal (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	42,918	0	0	0	0
1963	0	0	0	0	168,358	0	0	0	0
1964	0	0	0	0	184,729	0	0	0	0
1965	2,634	6,490	4,704	12,904	378,874	0	0	0	0
1966	4,707	10,328	9,233	25,519	408,397	0	0	0	0
1967	2,712	7,659	10,812	34,347	634,505	0	0	0	0
1968	3,109	7,960	10,166	40,372	584,482	1,001,998	228,359	103,116	1,333,473
1969	3,944	5,975	8,795	38,566	669,346	933,116	301,596	188,194	1,422,906
1970	2,464	(1,991)	6,870	28,210	598,348	971,602	306,198	151,539	1,429,339
1971	3,116	9,394	9,895	31,068	526,068	1,103,021	254,786	113,694	1,471,501
1972	5,125	10,247	12,054	44,699	607,578	1,107,855	230,906	110,109	1,448,870
1973	4,178	7,500	4,890	43,816	570,551	1,150,864	221,445	100,221	1,472,530
1974	7,812	7,564	5,523	48,054	727,158	1,272,034	231,383	117,156	1,620,573
1975	18,120	14,683	18,325	68,377	908,648	1,434,736	455,110	201,075	2,090,921
1976	10,873	5,557	19,920	49,921	963,429	1,519,801	217,348	453,400	2,190,549
1977	(240)	2,228	8,391	89,579	866,312	1,913,643	292,380	196,564	2,402,587
1978	(1,404)	16,766	(5,313)	104,078	1,137,690	1,860,456	306,503	188,214	2,355,173
1979	1,269	29,294	7,351	106,835	1,176,630	1,848,109	231,339	145,205	2,224,653
1980	3,621	24,270	17,404	110,852	1,850,894	2,365,408	472,660	247,608	3,085,676
1981	4,038	20,109	17,586	98,143	1,524,638	2,651,688	435,371	154,231	3,241,290
1982	2,236	22,870	21,919	202,590	1,913,949	3,192,562	599,785	244,662	4,037,009
1983	(2,047)	48,781	45,573	216,434	2,177,104	4,245,307	802,903	273,079	5,321,289
1984	4,449	44,017	23,563	455,058	3,014,144	4,374,183	810,669	291,622	5,476,474
1985	13,097	74,565	57,920	238,066	3,311,137	5,135,068	811,987	278,258	6,225,313
1986	11,614	31,084	46,864	363,357	3,036,716	5,372,138	995,477	391,402	6,759,017
1987	15,273	25,182	37,949	416,375	3,438,674	5,348,454	998,086	380,398	6,726,938
1988	30,214	41,049	49,157	335,478	3,383,957	5,337,730	828,013	362,838	6,528,581
1989	9,740	54,866	114,259	179,358	3,498,222	5,730,640	850,942	907,811	7,489,393
1990	31,158	69,390	119,277	247,718	3,852,174	6,734,670	1,071,457	885,802	8,691,929
1991	22,423	(18,753)	99,513	261,986	2,493,590	6,803,044	1,093,749	597,199	8,493,992
1992	37,849	385,235	102,802	186,631	4,644,275	9,460,843	1,435,171	681,402	11,577,416
1993	27,450	194,523	94,147	315,986	6,156,421	10,225,340	1,380,015	907,686	12,513,041
1994	28,092	90,141	80,459	409,634	6,374,148	9,774,255	1,474,142	874,655	12,123,052
1995	27,468	70,442	71,612	378,761	5,467,973	9,789,584	2,245,770	935,108	12,970,462
1996	84,526	186,859	78,432	339,546	5,823,398	10,619,758	2,830,146	657,243	14,107,147
1997	73,400	67,519	82,164	366,788	5,765,633	11,145,996	1,914,333	625,803	13,686,132
1998	77,361	70,921	86,321	395,772	5,699,249	11,364,544	2,000,189	650,638	14,015,371
1999	79,715	72,923	88,591	407,272	5,864,403	11,130,523	2,047,126	668,146	13,845,795
2000	79,715	72,923	88,591	407,272	5,870,116	11,140,291	2,052,406	669,760	13,862,457
2001	79,715	72,923	88,591	407,272	5,874,102	11,148,328	2,055,704	670,769	13,874,801
2002	79,715	72,923	88,591	407,272	5,874,927	11,149,815	2,056,527	671,020	13,877,362
2003	79,715	72,923	88,591	407,272	5,875,330	11,150,547	2,056,911	671,138	13,878,596
2004	79,715	72,923	88,591	407,272	5,875,840	11,151,468	2,057,404	671,289	13,880,161
2005	79,715	72,923	88,591	407,272	5,873,378	11,147,060	2,054,846	670,507	13,872,413
2006	79,715	72,923	88,591	407,272	5,873,603	11,147,470	2,055,065	670,573	13,873,108
2007	79,715	72,923	88,591	407,272	5,873,940	11,148,083	2,055,387	670,672	13,874,142
2008	79,715	72,923	88,591	407,272	5,874,249	11,148,644	2,055,683	670,763	13,875,090
2009	79,715	72,923	88,591	407,272	5,874,563	11,149,217	2,055,991	670,856	13,876,064
2010	79,715	72,923	88,591	407,272	5,874,909	11,149,869	2,056,245	670,934	13,877,048
2011	79,713	72,922	88,590	407,267	5,875,106	11,150,252	2,056,488	671,006	13,877,746
2012	79,713	72,922	88,590	407,267	5,875,417	11,150,811	2,056,783	671,096	13,878,690
2013	79,713	72,922	88,590	407,267	5,876,286	11,152,389	2,057,620	671,353	13,881,362
2014	79,713	72,922	88,590	407,267	5,876,641	11,153,128	2,057,656	671,365	13,882,149
2015	79,713	72,922	88,590	407,267	5,876,971	11,153,639	2,058,266	671,550	13,883,455
2016	79,713	72,922	88,590	407,267	5,876,888	11,153,487	2,058,188	671,527	13,883,202
2017	79,713	72,922	88,590	407,267	5,876,944	11,153,583	2,058,239	671,543	13,883,365
2018	79,713	72,922	88,590	407,267	5,877,021	11,153,728	2,058,315	671,566	13,883,609
2019	79,713	72,922	88,590	407,267	5,877,024	11,153,734	2,058,320	671,568	13,883,622
2020	79,713	72,922	88,590	407,267	5,877,037	11,153,765	2,058,315	671,566	13,883,646
2021	79,713	72,922	88,590	407,267	5,876,321	11,152,462	2,057,622	671,354	13,881,438
2022	79,713	72,922	88,590	407,267	5,876,314	11,152,447	2,057,611	671,350	13,881,408
2023	79,713	72,922	88,590	407,267	5,876,297	11,152,414	2,057,598	671,345	13,881,357
2024	79,713	72,922	88,590	407,267	5,876,302	11,152,428	2,057,603	671,348	13,881,379
2025	79,713	72,922	88,590	407,267	5,876,259	11,152,351	2,057,564	671,337	13,881,252
2026	79,713	72,922	88,590	407,267	5,876,213	11,152,263	2,057,515	671,322	13,881,100
2027	79,713	72,922	88,590	407,267	5,876,191	11,152,226	2,057,498	671,317	13,881,041
2028	79,713	72,922	88,590	407,267	5,875,827	11,151,567	2,057,146	671,209	13,879,922
2029	79,713	72,922	88,590	407,267	5,875,827	11,151,564	2,057,148	671,209	13,879,921
2030	79,713	72,922	88,590	407,267	5,875,861	11,151,626	2,057,178	671,218	13,880,022
2031	79,713	72,922	88,590	407,267	5,875,789	11,151,505	2,057,088	671,191	13,879,784
2032	79,713	72,922	88,590	407,267	5,875,796	11,151,512	2,057,096	671,193	13,879,801
2033	79,713	72,922	88,590	407,267	5,875,804	11,151,531	2,057,105	671,196	13,879,832
2034	79,713	72,922	88,590	407,267	5,875,785	11,151,499	2,057,088	671,191	13,879,778
2035	79,713	72,922	88,590	407,267	5,875,883	11,151,671	2,057,192	671,222	13,880,085
TOTAL	3,519,786	4,340,850	4,656,379	21,353,817	301,965,481	558,357,344	102,425,755	37,245,501	698,028,600

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	San Luis Division						South San Joaquin Division		
	Reach 3 (20)	Reach 4 (21)	Reach 5 (22)	Reach 6 (23)	Reach 7 (24)	Subtotal (25)	Reach 8C (26)	Reach 8D (27)	Reach 9 (28)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	120,038	428,308	130,105	44,591	104,033	827,075	0	0	0
1969	90,033	460,907	184,467	35,696	235,322	1,006,425	22,013	134,760	86,103
1970	89,547	484,300	226,002	66,070	192,582	1,058,501	26,207	156,981	128,273
1971	99,917	541,574	175,592	64,193	158,170	1,039,446	32,312	190,753	118,372
1972	116,708	647,979	174,519	73,670	154,783	1,167,659	35,031	187,242	130,396
1973	116,791	611,705	158,145	58,344	153,955	1,098,940	51,150	225,747	127,530
1974	120,309	671,455	150,835	63,905	150,230	1,156,734	34,752	199,127	131,298
1975	133,593	839,285	178,974	81,478	157,586	1,390,916	78,523	250,377	159,006
1976	54,938	883,956	220,832	90,305	174,835	1,424,866	39,348	133,933	123,424
1977	73,331	1,114,465	270,734	98,132	196,311	1,752,973	38,086	121,348	178,078
1978	45,867	898,992	203,261	106,938	203,079	1,458,137	45,552	178,805	129,928
1979	223,973	842,508	144,055	99,670	180,734	1,490,940	69,973	150,679	129,756
1980	243,507	1,176,613	222,942	127,625	281,860	2,052,547	57,726	274,848	185,155
1981	266,787	1,066,979	192,600	90,373	1,611,941	3,228,680	80,124	198,366	144,296
1982	279,263	1,241,069	209,336	114,408	1,433,163	3,277,239	59,425	269,115	233,520
1983	215,365	1,949,285	339,626	131,313	2,143,589	4,779,178	49,448	383,441	223,042
1984	241,183	2,227,654	335,406	163,942	2,111,502	5,079,687	42,186	459,341	301,458
1985	322,373	2,877,575	363,611	177,564	1,607,182	5,348,305	64,900	548,818	254,943
1986	423,121	2,987,599	484,124	255,459	615,928	4,766,231	93,883	502,562	611,010
1987	382,449	3,084,556	440,204	240,907	462,871	4,610,987	115,898	429,826	452,825
1988	365,478	2,950,429	456,646	231,714	639,216	4,643,483	96,996	381,362	419,922
1989	263,048	3,157,949	394,410	333,431	634,137	4,782,975	83,312	389,278	400,476
1990	402,916	3,897,952	505,496	437,725	693,942	5,938,031	111,122	435,268	513,924
1991	267,362	4,332,910	543,617	728,050	765,613	6,637,552	104,411	496,739	465,927
1992	322,553	3,817,902	813,824	365,787	818,406	6,138,472	118,342	511,741	416,326
1993	442,561	4,290,287	1,008,524	551,919	734,797	7,028,088	231,610	755,865	498,748
1994	340,088	4,815,929	925,633	417,277	566,370	7,065,297	125,985	605,516	574,871
1995	706,578	4,925,549	1,070,834	445,853	1,165,006	8,313,820	168,418	640,709	478,826
1996	741,721	4,694,156	988,144	552,981	798,113	7,775,115	263,219	794,763	670,531
1997	702,442	5,311,385	1,147,834	429,960	685,068	8,276,689	275,700	841,689	679,018
1998	740,080	5,022,670	1,177,761	420,820	625,197	7,986,528	234,054	889,663	731,424
1999	771,784	4,373,010	920,767	423,652	577,404	7,066,617	240,971	915,454	752,618
2000	777,378	4,393,964	926,304	425,418	579,634	7,102,698	241,028	918,367	755,347
2001	780,877	4,410,551	929,732	426,512	581,017	7,128,689	241,063	920,170	757,035
2002	781,748	4,413,752	930,592	426,786	581,362	7,134,240	241,073	920,624	757,459
2003	782,156	4,415,314	930,995	426,915	581,525	7,136,905	241,076	920,836	757,658
2004	782,678	4,417,288	931,509	427,078	581,732	7,140,285	241,081	921,106	757,911
2005	779,968	4,407,725	928,833	426,225	580,655	7,123,406	241,054	919,697	756,593
2006	780,199	4,408,604	929,061	426,296	580,746	7,124,906	241,056	919,818	756,703
2007	780,540	4,409,911	929,396	426,405	580,882	7,127,134	241,060	919,995	756,870
2008	780,855	4,411,111	929,708	426,504	581,007	7,129,185	241,063	920,157	757,022
2009	781,181	4,412,335	930,030	426,606	581,136	7,131,288	241,066	920,327	757,181
2010	781,450	4,413,673	930,290	426,689	581,241	7,133,343	241,069	920,464	757,310
2011	781,721	4,414,716	930,562	426,774	581,348	7,135,121	241,068	920,601	757,439
2012	782,032	4,415,908	930,869	426,872	581,473	7,137,154	241,072	920,763	757,591
2013	782,920	4,419,285	931,746	427,152	581,825	7,142,928	241,080	921,225	758,023
2014	782,959	4,420,642	931,773	427,161	581,836	7,144,371	241,080	921,239	758,036
2015	783,604	4,421,946	932,419	427,367	582,097	7,147,433	241,087	921,579	758,355
2016	783,520	4,421,619	932,335	427,340	582,064	7,146,878	241,086	921,536	758,314
2017	783,576	4,421,830	932,390	427,358	582,085	7,147,239	241,087	921,564	758,341
2018	783,656	4,422,134	932,469	427,382	582,116	7,147,757	241,087	921,605	758,379
2019	783,660	4,422,152	932,475	427,384	582,118	7,147,789	241,087	921,608	758,382
2020	783,655	4,422,202	932,469	427,382	582,116	7,147,824	241,087	921,605	758,379
2021	782,923	4,419,418	931,746	427,152	581,825	7,143,064	241,080	921,224	758,023
2022	782,909	4,419,385	931,735	427,148	581,821	7,142,998	241,080	921,219	758,016
2023	782,895	4,419,318	931,719	427,143	581,815	7,142,890	241,079	921,211	758,010
2024	782,902	4,419,345	931,726	427,145	581,817	7,142,935	241,080	921,215	758,013
2025	782,861	4,419,179	931,684	427,133	581,801	7,142,658	241,079	921,192	757,993
2026	782,808	4,418,992	931,633	427,116	581,781	7,142,330	241,078	921,166	757,968
2027	782,790	4,418,914	931,616	427,110	581,773	7,142,203	241,078	921,156	757,959
2028	782,417	4,417,503	931,250	426,993	581,625	7,139,788	241,074	920,963	757,779
2029	782,419	4,417,498	931,250	426,994	581,625	7,139,786	241,074	920,963	757,780
2030	782,451	4,417,628	931,282	427,004	581,639	7,140,004	241,075	920,981	757,794
2031	782,356	4,417,356	931,188	426,975	581,602	7,139,477	241,074	920,932	757,748
2032	782,364	4,417,373	931,195	426,976	581,604	7,139,512	241,074	920,936	757,752
2033	782,374	4,417,410	931,205	426,979	581,608	7,139,576	241,074	920,940	757,757
2034	782,356	4,417,340	931,186	426,974	581,601	7,139,457	241,074	920,931	757,747
2035	782,467	4,417,717	931,292	427,006	581,643	7,140,125	241,075	920,986	757,799
TOTAL	37,885,329	235,617,930	48,276,524	22,893,206	41,968,520	386,641,509	11,769,335	45,805,017	37,727,490

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued) South San Joaquin Division (continued) Reach 10A (29)	Reach 11B (30)	Reach 12D (31)	Reach 12E (32)	Reach 13B (33)	Reach 14A (34)	Reach 14B (35)	Reach 14C (36)	Reach 15A (37)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	83,706	59,077	0	0	0	0	0	0	0
1970	118,046	85,758	94,171	123,374	152,424	0	0	0	0
1971	129,811	80,282	95,075	91,389	167,142	691,791	151,979	111,623	529,723
1972	117,625	84,287	98,647	115,592	146,096	877,535	124,831	101,479	609,058
1973	117,706	92,257	74,238	114,843	221,385	961,855	120,106	99,429	692,748
1974	141,658	98,103	74,914	193,523	141,540	898,272	143,866	115,649	853,098
1975	207,908	124,105	61,799	117,194	108,154	1,156,757	180,614	119,889	988,045
1976	139,134	69,715	33,655	147,908	134,063	1,124,051	177,086	114,133	1,037,799
1977	194,086	108,644	91,547	175,039	137,975	1,397,006	203,837	119,467	1,339,196
1978	168,634	106,702	72,585	170,578	151,120	1,254,043	139,662	132,224	1,265,813
1979	175,107	85,942	56,331	174,147	150,029	1,490,461	201,935	260,981	1,216,126
1980	284,207	120,896	123,120	167,249	164,749	1,988,704	189,132	238,607	1,437,678
1981	200,043	77,034	33,420	113,272	171,780	1,735,318	163,799	161,086	1,793,185
1982	264,977	158,196	142,657	224,190	224,079	1,793,664	195,002	15,709	1,934,085
1983	308,758	136,321	124,693	203,707	217,278	2,422,112	200,066	181,913	2,550,618
1984	397,252	164,515	109,487	188,738	245,949	3,309,783	329,448	204,173	3,214,112
1985	346,406	252,692	206,439	239,944	360,512	3,465,639	237,078	180,032	3,429,538
1986	438,930	266,509	259,983	362,230	349,110	3,775,789	321,006	360,173	3,568,705
1987	495,960	337,948	330,151	472,973	325,052	3,675,183	463,843	241,675	4,025,478
1988	534,603	293,255	222,954	376,792	318,463	3,452,742	411,088	313,788	3,754,058
1989	732,704	267,764	207,008	595,389	380,401	3,494,799	334,376	221,239	3,737,497
1990	650,012	361,873	222,608	479,012	674,777	3,973,002	441,339	213,902	4,331,406
1991	716,280	328,619	269,849	371,292	433,204	4,267,812	424,628	273,099	4,526,392
1992	582,123	328,946	275,962	401,696	424,129	4,725,687	729,524	571,593	4,264,872
1993	732,913	413,823	278,430	497,004	594,291	5,151,187	663,961	423,683	5,228,390
1994	706,106	346,684	239,929	481,512	445,363	4,644,708	415,348	253,663	4,343,747
1995	849,113	383,927	237,654	571,880	473,821	4,443,159	335,875	300,450	3,946,339
1996	868,348	618,821	507,293	675,054	624,519	5,136,543	617,105	505,432	5,053,139
1997	781,774	582,269	537,813	718,136	1,087,191	5,225,037	691,504	490,364	5,137,298
1998	842,217	568,692	503,740	789,813	1,264,229	5,480,638	729,162	477,385	5,351,736
1999	776,376	570,910	518,034	813,653	848,065	5,582,514	714,587	491,162	5,448,752
2000	779,303	572,523	520,647	815,338	850,450	5,592,745	717,307	493,153	5,454,729
2001	781,117	573,522	522,266	816,382	851,926	5,600,662	719,106	494,467	5,459,579
2002	781,571	573,773	522,671	816,643	852,297	5,602,229	719,525	494,775	5,460,492
2003	781,784	573,891	522,862	816,766	852,471	5,602,986	719,724	494,921	5,460,939
2004	782,056	574,040	523,104	816,922	852,693	5,603,953	719,978	495,107	5,461,503
2005	780,641	573,259	521,841	816,107	851,540	5,599,196	718,631	494,122	5,458,769
2006	780,762	573,326	521,949	816,176	851,637	5,599,622	718,744	494,203	5,459,020
2007	780,939	573,424	522,107	816,279	851,783	5,600,259	718,910	494,325	5,459,392
2008	781,104	573,515	522,254	816,374	851,917	5,600,843	719,065	494,437	5,459,735
2009	781,274	573,608	522,406	816,472	852,055	5,601,443	719,224	494,554	5,460,087
2010	781,412	573,685	522,530	816,551	852,167	5,602,052	719,343	494,640	5,460,469
2011	781,549	573,759	522,656	816,624	852,278	5,602,521	719,471	494,738	5,460,720
2012	781,714	573,849	522,802	816,717	852,411	5,603,104	719,624	494,850	5,461,059
2013	782,177	574,104	523,216	816,984	852,789	5,604,751	720,057	495,168	5,462,027
2014	782,191	574,111	523,228	816,992	852,801	5,605,255	720,032	495,149	5,462,414
2015	782,533	574,300	523,533	817,190	853,079	5,606,041	720,388	495,409	5,462,786
2016	782,489	574,277	523,494	817,164	853,042	5,605,881	720,346	495,379	5,462,691
2017	782,517	574,292	523,520	817,181	853,066	5,605,984	720,374	495,398	5,462,753
2018	782,559	574,315	523,556	817,205	853,100	5,606,133	720,413	495,427	5,462,840
2019	782,562	574,316	523,559	817,206	853,102	5,606,142	720,416	495,429	5,462,844
2020	782,559	574,315	523,556	817,205	853,100	5,606,158	720,411	495,426	5,462,860
2021	782,177	574,104	523,216	816,984	852,788	5,604,798	720,053	495,163	5,462,064
2022	782,171	574,101	523,210	816,980	852,784	5,604,781	720,048	495,159	5,462,054
2023	782,163	574,096	523,204	816,976	852,777	5,604,751	720,040	495,154	5,462,034
2024	782,167	574,099	523,207	816,977	852,780	5,604,763	720,044	495,157	5,462,041
2025	782,144	574,087	523,186	816,966	852,763	5,604,682	720,024	495,140	5,461,995
2026	782,117	574,071	523,163	816,950	852,740	5,604,590	719,999	495,123	5,461,941
2027	782,109	574,066	523,154	816,945	852,732	5,604,554	719,989	495,116	5,461,919
2028	781,913	573,960	522,981	816,833	852,574	5,603,866	719,809	494,983	5,461,515
2029	781,914	573,960	522,982	816,833	852,575	5,603,862	719,808	494,984	5,461,514
2030	781,932	573,970	522,996	816,844	852,590	5,603,927	719,826	494,996	5,461,552
2031	781,882	573,942	522,952	816,814	852,549	5,603,783	719,776	494,960	5,461,475
2032	781,885	573,943	522,955	816,817	852,550	5,603,790	719,779	494,962	5,461,480
2033	781,891	573,946	522,960	816,820	852,555	5,603,810	719,783	494,964	5,461,490
2034	781,881	573,942	522,951	816,814	852,548	5,603,776	719,774	494,959	5,461,471
2035	781,937	573,973	523,001	816,847	852,593	5,603,961	719,826	494,996	5,461,576
TOTAL	41,247,619	28,235,030	24,928,061	39,571,001	41,826,492	289,317,445	35,961,454	25,110,895	282,212,460

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	South San Joaquin Division (continued)		Tehachapi Division			Mojave Division			
Calendar Year	Reach 16A (38)	Subtotal (39)	Reach 17E (40)	Reach 17F (41)	Subtotal (42)	Reach 18A (43)	Reach 19 (44)	Reach 19C (45)	Reach 20A (46)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	385,659	0	0	0	0	0	0	0
1970	0	885,234	0	0	0	0	0	0	0
1971	10,291	2,400,543	3,471	0	3,471	0	0	0	0
1972	1,106,884	3,734,703	1,424,782	28,127	1,452,909	36,699	135,675	0	130,711
1973	1,243,941	4,142,935	1,777,260	49,949	1,827,209	36,207	146,739	0	161,838
1974	1,343,972	4,369,772	2,298,091	16,259	2,314,350	30,525	90,404	0	115,571
1975	1,537,862	5,090,233	2,403,430	35,193	2,438,623	40,588	122,584	0	137,684
1976	1,727,428	5,001,677	2,776,194	126,653	2,902,847	118,610	201,215	0	182,927
1977	1,961,081	6,065,390	3,845,464	83,936	3,929,400	93,565	226,906	0	180,884
1978	1,922,950	5,738,596	2,954,313	42,637	2,996,950	91,815	200,759	0	215,673
1979	1,798,566	5,960,033	3,539,402	45,997	3,585,399	99,670	307,386	0	261,205
1980	2,231,541	7,463,612	4,749,456	54,806	4,804,262	116,487	446,175	0	290,719
1981	2,747,281	7,619,004	5,469,195	64,906	5,534,101	316,675	585,358	0	325,381
1982	2,961,054	8,475,673	6,348,809	56,016	6,404,825	447,834	639,020	0	276,072
1983	4,302,525	11,303,922	14,152,909	96,401	14,249,310	345,246	564,768	0	368,192
1984	5,072,902	14,039,344	18,425,400	77,216	18,502,616	267,573	563,523	0	413,690
1985	5,688,501	15,275,442	18,160,112	137,928	18,298,040	298,927	475,002	0	450,422
1986	5,769,321	16,679,211	19,232,233	109,932	19,342,165	706,338	350,750	0	347,575
1987	5,516,705	16,883,517	16,699,386	98,306	16,797,692	1,260,955	558,178	0	817,806
1988	5,171,041	15,747,064	17,842,932	138,276	17,981,208	1,236,942	560,646	0	584,863
1989	5,440,121	16,284,364	17,586,947	88,222	17,675,169	1,049,046	282,519	0	366,219
1990	6,354,239	18,762,484	19,531,129	99,555	19,630,684	1,297,068	230,589	0	470,633
1991	5,733,989	18,412,241	19,510,605	131,115	19,641,720	1,428,190	665,208	0	1,024,911
1992	6,443,009	19,793,950	18,057,860	279,375	18,337,235	1,166,171	738,399	0	666,210
1993	7,506,789	22,976,694	18,255,126	199,361	18,454,487	1,869,762	607,057	0	1,232,685
1994	8,607,430	21,790,862	18,228,933	204,762	18,433,695	1,691,537	761,281	0	1,143,302
1995	6,591,374	19,421,545	19,113,945	181,877	19,295,822	1,355,364	596,024	0	1,819,093
1996	7,288,324	23,623,091	22,332,933	294,210	22,627,143	1,753,786	911,614	0	957,201
1997	8,110,840	25,158,633	23,525,641	250,312	23,775,953	1,699,529	898,181	0	1,124,381
1998	8,284,106	26,146,859	23,365,829	149,756	23,515,585	1,574,794	831,764	0	1,267,493
1999	7,978,564	25,651,660	22,922,432	153,815	23,076,247	1,621,122	850,250	0	1,301,420
2000	7,993,590	25,704,527	22,939,719	154,448	23,094,167	1,625,847	872,954	0	1,316,007
2001	8,005,376	25,742,671	22,954,035	154,947	23,108,982	1,629,720	891,026	0	1,327,617
2002	8,007,672	25,750,804	22,956,667	155,043	23,111,710	1,630,437	894,447	0	1,329,816
2003	8,008,789	25,754,703	22,957,963	155,090	23,113,053	1,630,790	896,100	0	1,330,880
2004	8,010,206	25,759,660	22,959,596	155,151	23,114,747	1,631,235	898,250	0	1,332,259
2005	8,002,962	25,734,412	22,951,806	154,824	23,106,630	1,629,036	886,780	0	1,324,891
2006	8,003,587	25,736,603	22,952,532	154,851	23,107,383	1,629,235	887,725	0	1,325,499
2007	8,004,518	25,739,861	22,953,618	154,888	23,108,506	1,629,530	889,103	0	1,326,384
2008	8,005,380	25,742,866	22,954,611	154,924	23,109,535	1,629,799	890,402	0	1,327,218
2009	8,006,264	25,745,961	22,955,625	154,965	23,110,590	1,630,079	891,802	0	1,328,118
2010	8,007,045	25,748,737	22,956,787	154,986	23,111,773	1,630,363	892,724	0	1,328,709
2011	8,007,748	25,751,172	22,957,536	155,017	23,112,553	1,630,585	893,823	0	1,329,404
2012	8,008,607	25,754,163	22,958,525	155,053	23,113,578	1,630,853	895,103	0	1,330,227
2013	8,011,029	25,762,630	22,961,321	155,155	23,116,476	1,631,617	898,756	0	1,332,572
2014	8,011,338	25,763,866	22,962,660	155,131	23,117,791	1,631,861	898,285	0	1,332,272
2015	8,012,900	25,769,180	22,963,537	155,232	23,118,769	1,632,213	901,503	0	1,334,338
2016	8,012,663	25,768,362	22,963,264	155,222	23,118,486	1,632,139	901,153	0	1,334,113
2017	8,012,818	25,768,895	22,963,439	155,230	23,118,669	1,632,188	901,384	0	1,334,262
2018	8,013,035	25,769,654	22,963,691	155,237	23,118,928	1,632,257	901,708	0	1,334,468
2019	8,013,048	25,769,701	22,963,704	155,238	23,118,942	1,632,260	901,740	0	1,334,488
2020	8,013,049	25,769,710	22,963,759	155,235	23,118,994	1,632,268	901,674	0	1,334,448
2021	8,011,046	25,762,720	22,961,454	155,152	23,116,606	1,631,639	898,667	0	1,332,516
2022	8,011,023	25,762,626	22,961,429	155,152	23,116,581	1,631,631	898,632	0	1,332,494
2023	8,010,976	25,762,471	22,961,371	155,150	23,116,521	1,631,615	898,564	0	1,332,451
2024	8,010,996	25,762,539	22,961,393	155,150	23,116,543	1,631,622	898,592	0	1,332,469
2025	8,010,880	25,762,131	22,961,256	155,144	23,116,400	1,631,590	898,479	0	1,332,396
2026	8,010,744	25,761,650	22,961,101	155,139	23,116,240	1,631,544	898,217	0	1,332,226
2027	8,010,689	25,761,466	22,961,037	155,136	23,116,173	1,631,527	898,202	0	1,332,216
2028	8,009,682	25,757,932	22,959,868	155,094	23,114,962	1,631,208	896,622	0	1,331,201
2029	8,009,677	25,757,926	22,959,862	155,094	23,114,956	1,631,209	896,675	0	1,331,236
2030	8,009,771	25,758,254	22,959,972	155,100	23,115,072	1,631,239	896,821	0	1,331,328
2031	8,009,535	25,757,422	22,959,761	155,087	23,114,848	1,631,170	896,354	0	1,331,029
2032	8,009,544	25,757,467	22,959,773	155,087	23,114,860	1,631,178	896,423	0	1,331,075
2033	8,009,574	25,757,564	22,959,805	155,088	23,114,893	1,631,187	896,468	0	1,331,104
2034	8,009,522	25,757,390	22,959,747	155,085	23,114,832	1,631,168	896,379	0	1,331,045
2035	8,009,791	25,758,361	22,960,053	155,097	23,115,150	1,631,251	896,763	0	1,331,290
TOTAL	418,777,705	1,322,490,004	1,191,056,496	8,877,520	1,199,934,016	80,766,115	45,796,274	0	64,538,827

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	Mojave Division (continued)							Santa Ana Division	
	Reach 20B (47)	Reach 21 (48)	Reach 22A (49)	Reach 22B (50)	Reach 23 (51)	Reach 24 (52)	Subtotal (53)	Reach 25 (54)	Reach 26A (55)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	120,271	75,768	80,436	1,036,831	51,520	362,153	2,030,064	26	578
1973	148,631	60,641	66,539	1,283,816	65,475	353,262	2,323,148	20,541	679,328
1974	88,200	65,007	77,667	1,477,946	96,340	334,302	2,375,962	24,380	799,400
1975	118,898	135,462	77,825	1,630,554	111,141	419,450	2,794,186	29,337	885,021
1976	151,555	106,314	131,007	1,598,071	107,787	304,638	2,902,124	51,356	1,103,139
1977	112,589	98,757	86,279	1,882,080	71,228	48,359	2,800,647	62,584	1,412,740
1978	120,584	109,271	71,763	2,211,965	72,179	637,401	3,731,410	67,186	1,159,950
1979	194,104	203,078	121,586	2,104,832	76,960	202,566	3,571,387	84,462	1,235,189
1980	237,250	156,794	117,274	2,670,471	147,009	688,605	4,870,784	72,651	1,532,581
1981	292,357	181,221	119,724	3,024,706	134,895	45,392	5,025,709	35,662	1,570,900
1982	330,816	186,291	125,561	3,251,159	299,712	624,015	6,180,480	26,852	1,822,263
1983	326,822	219,976	140,547	3,899,533	222,064	382,195	6,469,343	19,017	1,665,570
1984	330,203	267,077	146,984	4,783,318	59,337	1,106,756	7,938,461	11,319	2,325,285
1985	388,307	799,502	125,775	5,333,323	261,135	811,327	8,943,720	17,764	2,708,035
1986	315,442	242,085	178,795	6,186,754	154,339	515,535	8,997,613	31,012	2,776,681
1987	357,311	297,777	235,951	5,665,573	150,089	731,794	10,075,434	19,362	2,847,304
1988	399,768	331,019	149,786	6,916,654	252,077	969,393	11,401,148	36,499	3,081,533
1989	345,236	193,800	138,660	5,943,071	348,163	1,242,744	9,909,458	30,743	3,190,988
1990	203,520	274,423	49,712	6,838,761	435,238	1,888,580	11,688,524	25,302	3,328,932
1991	516,038	478,431	231,161	7,437,336	259,965	1,560,497	13,601,737	31,894	3,845,121
1992	696,586	585,228	168,249	7,121,537	316,340	637,775	12,096,495	55,711	4,043,353
1993	818,369	509,369	207,917	7,728,429	359,658	1,690,885	15,024,131	72,289	5,573,620
1994	953,694	871,578	241,011	8,886,315	1,220,239	1,258,076	17,027,033	104,299	5,290,228
1995	2,291,447	399,947	175,830	7,533,061	505,839	787,634	15,464,239	116,259	5,852,260
1996	1,913,206	515,552	408,935	6,952,596	430,459	605,795	14,449,144	57,163	4,049,262
1997	728,577	977,426	390,893	7,147,782	894,001	4,711,757	18,572,527	60,906	4,287,029
1998	746,197	998,057	311,592	7,380,610	1,332,477	1,394,053	15,837,037	58,420	4,663,394
1999	764,451	572,050	318,961	7,502,231	1,362,904	1,127,310	15,420,699	60,074	4,772,372
2000	779,038	580,294	325,431	7,562,877	1,366,795	875,151	15,304,394	60,074	4,777,558
2001	790,648	586,856	330,579	7,611,493	1,370,017	994,367	15,532,323	60,074	4,781,854
2002	792,847	588,101	331,554	7,620,633	1,370,609	2,119,313	16,677,757	60,074	4,782,643
2003	793,911	588,700	332,027	7,625,048	1,370,901	2,062,026	16,630,383	60,074	4,783,032
2004	795,290	589,480	332,637	7,630,773	1,371,269	1,335,653	15,916,846	60,074	4,783,522
2005	787,922	585,316	329,368	7,599,962	1,369,515	1,636,812	16,149,602	60,074	4,781,185
2006	788,530	585,657	329,640	7,602,474	1,369,679	1,905,040	16,423,479	60,074	4,781,403
2007	789,415	586,157	330,031	7,606,144	1,369,923	1,351,874	15,878,561	60,074	4,781,729
2008	790,249	586,631	330,402	7,609,616	1,370,147	1,880,165	16,414,629	60,074	4,782,026
2009	791,149	587,138	330,799	7,613,291	1,370,375	1,392,996	15,935,747	60,074	4,782,330
2010	791,740	587,473	331,063	7,615,642	1,370,637	546,241	15,094,592	60,074	4,782,679
2011	792,443	587,868	331,377	7,618,587	1,370,823	1,550,175	16,105,085	60,073	4,782,893
2012	793,266	588,334	331,741	7,622,021	1,371,046	1,856,569	16,419,160	60,073	4,783,189
2013	795,611	589,661	332,780	7,631,749	1,371,676	2,006,672	16,591,094	60,073	4,784,028
2014	795,311	589,488	332,648	7,630,039	1,371,977	1,225,661	15,807,542	60,073	4,784,429
2015	797,377	590,656	333,564	7,639,066	1,372,174	2,291,801	16,892,692	60,073	4,784,693
2016	797,152	590,530	333,466	7,638,102	1,372,113	768,198	15,366,966	60,073	4,784,612
2017	797,301	590,612	333,530	7,638,731	1,372,152	1,408,075	16,008,235	60,073	4,784,664
2018	797,507	590,732	333,621	7,639,602	1,372,209	1,734,994	16,337,098	60,073	4,784,740
2019	797,527	590,741	333,630	7,639,668	1,372,212	1,371,487	15,973,753	60,073	4,784,743
2020	797,487	590,720	333,611	7,639,495	1,372,224	2,126,810	16,728,737	60,073	4,784,760
2021	795,555	589,626	332,754	7,631,468	1,371,706	1,625,709	16,209,640	60,073	4,784,068
2022	795,533	589,614	332,743	7,631,372	1,371,700	1,408,821	15,992,540	60,073	4,784,060
2023	795,490	589,589	332,725	7,631,196	1,371,687	1,819,213	16,402,530	60,073	4,784,043
2024	795,508	589,600	332,733	7,631,277	1,371,691	1,562,928	16,146,420	60,073	4,784,050
2025	795,435	589,558	332,702	7,630,917	1,371,660	1,588,506	16,171,243	60,073	4,784,009
2026	795,265	589,464	332,628	7,630,279	1,371,626	1,621,480	16,202,729	60,073	4,783,962
2027	795,255	589,457	332,622	7,630,167	1,371,612	1,326,498	15,907,556	60,073	4,783,943
2028	794,240	588,885	332,171	7,626,017	1,371,348	1,779,671	16,351,363	60,073	4,783,592
2029	794,275	588,904	332,187	7,626,118	1,371,347	1,743,534	16,315,485	60,073	4,783,590
2030	794,367	588,955	332,228	7,626,516	1,371,372	1,994,459	16,567,285	60,073	4,783,623
2031	794,068	588,789	332,096	7,625,275	1,371,324	2,251,173	16,821,278	60,073	4,783,560
2032	794,114	588,812	332,117	7,625,410	1,371,327	1,378,281	15,948,737	60,073	4,783,564
2033	794,143	588,829	332,128	7,625,533	1,371,335	1,530,298	16,101,025	60,073	4,783,574
2034	794,084	588,797	332,103	7,625,302	1,371,321	1,690,428	16,260,627	60,073	4,783,556
2035	794,329	588,935	332,213	7,626,381	1,371,390	2,497,838	17,070,390	60,073	4,783,648
TOTAL	42,583,811	31,100,860	16,646,069	409,887,556	59,159,489	83,701,166	834,180,167	3,445,709	248,701,610

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	Santa Ana Division (continued)				West Branch				
	Reach 28G (56)	Reach 28H (57)	Reach 28J (58)	Subtotal (59)	Reach 29A (60)	Reach 29F (61)	Reach 29G (62)	Reach 29H (63)	Reach 29J (64)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	109	30	0	743	719,255	159,249	199,145	234,196	88,198
1973	136,352	79	0	836,300	779,949	339,363	122,664	264,850	119,743
1974	155,262	34,693	854,637	1,868,372	883,312	158,366	112,458	350,160	(4,525)
1975	110,729	69,082	723,814	1,817,983	1,049,990	176,676	194,724	801,457	75,870
1976	138,575	100,400	635,853	2,029,323	1,220,429	215,588	202,591	624,614	98,268
1977	127,543	92,647	825,880	2,521,394	1,268,813	116,939	218,129	684,679	184
1978	166,919	68,363	835,082	2,297,500	1,174,708	342,479	267,308	415,641	17,764
1979	142,586	92,812	265,525	1,820,574	1,366,942	285,575	284,188	972,584	29,850
1980	158,340	129,897	1,120,131	3,013,600	1,698,257	224,472	455,619	874,259	288,303
1981	160,053	111,722	332,124	2,210,461	1,781,750	123,216	615,045	2,309,557	8,794
1982	205,350	135,463	1,530,845	3,720,773	1,919,982	190,480	702,262	2,223,146	414,230
1983	244,720	124,651	413,556	2,467,514	2,739,940	149,816	889,966	747,372	579,839
1984	240,496	190,924	770,804	3,538,828	3,460,638	80,998	2,356,779	543,274	718,154
1985	451,600	182,242	871,350	4,230,991	3,869,765	295,854	3,049,380	976,380	615,828
1986	439,048	256,526	983,200	4,486,467	3,785,090	457,661	2,897,411	1,481,169	1,029,535
1987	278,094	218,717	1,118,108	4,481,585	3,371,556	212,724	2,898,112	947,984	417,565
1988	271,876	200,794	1,178,950	4,769,652	3,459,706	254,893	3,014,253	884,733	456,842
1989	230,944	281,912	1,131,358	4,865,945	4,016,664	405,906	2,735,342	1,401,285	864,676
1990	437,647	307,979	1,538,570	5,638,430	4,032,642	383,356	3,208,362	3,139,995	751,391
1991	843,100	632,695	1,629,541	6,982,351	3,816,604	303,946	3,518,342	638,030	739,766
1992	281,800	5,636,668	1,102,398	11,119,930	4,275,048	328,734	3,887,618	1,022,385	872,924
1993	382,173	570,596	1,003,435	7,602,113	3,883,030	343,948	4,462,662	1,672,079	777,831
1994	616,750	415,603	1,020,925	7,447,805	3,291,857	296,842	2,886,854	1,871,244	204,598
1995	1,203,800	681,599	827,574	8,681,492	4,050,804	842,898	3,821,719	1,540,117	879,186
1996	1,691,865	1,141,351	1,838,195	8,777,836	4,985,129	1,039,059	4,827,262	3,341,942	654,329
1997	537,405	947,945	1,748,925	7,582,210	5,225,362	674,644	4,708,176	3,195,710	640,573
1998	509,574	371,473	1,644,604	7,247,465	5,339,528	498,319	2,423,130	2,970,144	631,020
1999	524,769	382,276	1,636,693	7,376,184	5,466,280	506,202	2,347,589	3,047,755	637,707
2000	524,769	382,276	1,339,223	7,083,900	5,471,088	530,643	2,354,923	3,135,447	637,707
2001	524,769	382,276	1,910,700	7,659,673	5,475,026	550,122	2,360,914	3,202,851	637,707
2002	524,769	382,276	2,225,452	7,975,214	5,475,760	553,869	2,362,026	3,215,918	637,707
2003	524,769	382,276	1,659,277	7,409,428	5,476,121	555,680	2,362,569	3,222,076	637,707
2004	524,769	382,276	2,053,632	7,804,273	5,476,574	558,000	2,363,260	3,230,010	637,707
2005	524,769	382,276	1,866,337	7,614,641	5,474,323	545,469	2,359,904	3,187,163	637,707
2006	524,769	382,276	1,692,725	7,441,247	5,474,524	546,486	2,360,208	3,190,593	637,707
2007	524,769	382,276	2,032,590	7,781,438	5,474,825	547,989	2,360,664	3,195,754	637,707
2008	524,769	382,276	1,871,059	7,620,204	5,475,102	549,399	2,361,083	3,200,624	637,707
2009	524,769	382,276	1,938,664	7,688,113	5,475,383	550,845	2,361,510	3,205,580	637,707
2010	524,769	382,276	2,092,627	7,842,425	5,475,669	551,797	2,361,964	3,208,789	637,707
2011	524,761	382,270	1,759,604	7,509,601	5,475,862	553,075	2,362,318	3,213,145	637,702
2012	524,761	382,270	1,938,734	7,689,027	5,476,136	554,477	2,362,735	3,218,047	637,702
2013	524,761	382,270	2,039,117	7,790,249	5,476,915	558,430	2,363,911	3,231,510	637,702
2014	524,761	382,270	1,824,317	7,575,850	5,477,145	557,716	2,364,343	3,229,041	637,702
2015	524,761	382,270	1,966,060	7,717,857	5,477,521	561,416	2,364,835	3,241,682	637,702
2016	524,761	382,270	2,058,735	7,810,451	5,477,445	561,017	2,364,721	3,240,421	637,702
2017	524,761	382,270	2,054,063	7,805,831	5,477,496	561,278	2,364,793	3,241,202	637,702
2018	524,761	382,270	1,918,809	7,670,653	5,477,566	561,635	2,364,900	3,242,390	637,702
2019	524,761	382,270	1,956,704	7,708,551	5,477,569	561,660	2,364,906	3,242,537	637,702
2020	524,761	382,270	1,830,055	7,581,919	5,477,578	561,593	2,364,924	3,242,336	637,702
2021	524,761	382,270	1,927,106	7,678,278	5,476,936	558,318	2,363,952	3,231,131	637,702
2022	524,761	382,270	2,018,192	7,769,356	5,476,927	558,280	2,363,944	3,231,022	637,702
2023	524,761	382,270	1,865,132	7,616,279	5,476,911	558,207	2,363,918	3,230,762	637,702
2024	524,761	382,270	2,136,817	7,887,971	5,476,918	558,241	2,363,930	3,230,923	637,702
2025	524,761	382,270	1,793,729	7,544,842	5,476,881	558,046	2,363,871	3,230,220	637,702
2026	524,761	382,270	2,096,579	7,847,645	5,476,838	557,835	2,363,805	3,229,531	637,702
2027	524,761	382,270	1,888,448	7,639,495	5,476,818	557,740	2,363,779	3,229,166	637,702
2028	524,761	382,270	1,916,972	7,667,668	5,476,495	556,102	2,363,286	3,223,524	637,702
2029	524,761	382,270	1,849,382	7,600,076	5,476,493	556,095	2,363,286	3,223,600	637,702
2030	524,761	382,270	2,042,265	7,792,992	5,476,524	556,254	2,363,328	3,224,026	637,702
2031	524,761	382,270	1,696,549	7,447,213	5,476,456	555,785	2,363,232	3,222,450	637,702
2032	524,761	382,270	2,045,312	7,795,980	5,476,461	555,800	2,363,239	3,222,528	637,702
2033	524,761	382,270	2,056,242	7,806,920	5,476,469	555,849	2,363,251	3,222,679	637,702
2034	524,761	382,270	1,811,434	7,562,094	5,476,451	555,763	2,363,226	3,222,322	637,702
2035	524,761	382,270	2,582,880	8,333,632	5,476,537	556,204	2,363,354	3,223,705	637,702
TOTAL	29,578,963	27,140,925	97,337,600	406,204,807	280,078,773	29,395,318	142,371,902	155,111,446	35,565,770

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								Grand Total (73)
	West Branch (continued)		Coastal Branch					Total (72)	
	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	3,088,954	5,306,854	934,119	0	0	0	934,119	24,818,739	26,012,786
1979	958,068	3,897,207	871,688	0	0	0	871,688	23,421,881	24,675,598
1980	222,549	3,763,459	1,052,335	0	0	0	1,052,335	30,106,275	32,039,355
1981	1,094,117	5,932,479	1,037,127	0	0	0	1,037,127	33,828,851	35,458,115
1982	978,814	6,428,914	1,020,431	0	0	0	1,020,431	39,545,344	41,662,234
1983	3,124,027	8,230,960	1,151,337	0	0	0	1,151,337	53,972,853	56,229,753
1984	727,530	7,887,373	1,432,019	0	0	0	1,432,019	63,894,802	67,048,671
1985	1,775,929	10,583,136	1,858,499	0	0	0	1,858,499	70,763,446	74,336,743
1986	1,339,162	10,990,028	1,719,082	0	0	0	1,719,082	73,739,814	77,008,549
1987	1,405,139	9,253,080	1,690,082	0	0	0	1,690,082	70,519,315	74,269,722
1988	1,450,284	9,520,711	1,965,892	0	0	0	1,965,892	72,557,739	76,274,023
1989	1,500,605	10,924,478	1,764,356	0	0	0	1,764,356	73,696,138	78,447,789
1990	853,576	12,369,322	2,248,906	0	0	0	2,248,906	84,968,310	90,160,359
1991	1,188,709	10,205,397	2,173,630	0	0	0	2,173,630	86,148,620	90,221,825
1992	2,206,869	12,593,578	2,456,307	0	0	0	2,456,307	94,113,383	99,935,675
1993	1,147,207	12,286,757	2,806,478	0	0	0	2,806,478	98,691,789	106,004,681
1994	1,730,194	10,281,589	3,855,938	0	0	0	3,855,938	98,025,271	105,540,253
1995	(87,163)	11,047,561	3,412,243	0	0	0	3,412,243	98,607,184	105,231,083
1996	1,367,455	16,215,176	3,971,278	0	0	0	3,971,278	111,545,930	119,277,086
1997	1,833,290	16,277,755	4,098,832	576,788	0	0	4,675,620	118,005,519	125,696,630
1998	1,615,942	13,478,083	4,169,078	622,465	0	0	4,791,543	113,018,471	120,630,187
1999	1,526,406	13,531,939	4,270,551	625,990	0	0	4,896,541	110,865,682	118,661,514
2000	2,517,147	14,646,955	4,275,596	628,043	0	0	4,903,639	111,702,737	119,508,309
2001	1,409,614	13,636,234	4,279,079	628,751	0	0	4,907,830	111,591,203	119,404,148
2002	1,848,463	14,093,743	4,279,835	629,035	0	0	4,908,870	113,529,700	121,344,081
2003	1,767,531	14,021,684	4,280,204	629,176	0	0	4,909,380	112,854,132	120,669,216
2004	1,738,301	14,003,852	4,280,670	629,352	0	0	4,910,022	112,529,846	120,345,821
2005	1,675,888	13,880,454	4,278,412	628,505	0	0	4,906,917	112,388,475	120,200,163
2006	1,732,325	13,941,843	4,278,619	628,583	0	0	4,907,202	112,555,771	120,367,852
2007	1,779,155	13,996,094	4,278,929	628,701	0	0	4,907,630	112,413,366	120,226,035
2008	1,671,612	13,895,527	4,279,212	628,809	0	0	4,908,021	112,695,057	120,508,263
2009	1,865,998	14,097,023	4,279,501	628,918	0	0	4,908,419	112,493,205	120,306,961
2010	1,718,321	13,954,247	4,279,815	629,041	0	0	4,908,856	111,671,021	119,485,389
2011	1,809,083	14,051,185	4,280,016	629,139	0	0	4,909,155	112,451,618	120,266,367
2012	1,593,844	13,842,941	4,280,298	629,244	0	0	4,909,542	112,744,255	120,559,544
2013	1,892,904	14,161,372	4,281,095	629,548	0	0	4,910,643	113,356,754	121,173,563
2014	1,827,640	14,093,587	4,281,415	629,682	0	0	4,911,097	112,296,253	120,113,725
2015	1,800,435	14,083,591	4,281,723	629,785	0	0	4,911,508	113,524,485	121,342,492
2016	1,732,862	14,014,168	4,281,646	629,756	0	0	4,911,402	112,019,915	119,837,771
2017	1,803,789	14,086,260	4,281,696	629,775	0	0	4,911,471	112,729,965	120,547,914
2018	1,716,689	14,000,882	4,281,767	629,802	0	0	4,911,569	112,840,150	120,658,234
2019	1,849,207	14,133,581	4,281,773	629,802	0	0	4,911,575	112,647,514	120,465,600
2020	1,808,158	14,092,291	4,281,782	629,810	0	0	4,911,592	113,234,713	121,052,824
2021	1,787,494	14,055,533	4,281,126	629,559	0	0	4,910,685	112,757,964	120,574,822
2022	1,754,314	14,022,189	4,281,119	629,556	0	0	4,910,675	112,598,373	120,415,217
2023	1,802,375	14,069,875	4,281,102	629,552	0	0	4,910,654	112,902,577	120,719,391
2024	1,725,796	13,993,510	4,281,109	629,555	0	0	4,910,664	112,841,961	120,658,786
2025	1,829,711	14,096,431	4,281,071	629,538	0	0	4,910,609	112,625,566	120,442,314
2026	1,724,676	13,990,387	4,281,026	629,521	0	0	4,910,547	112,852,628	120,669,295
2027	1,828,489	14,093,694	4,281,007	629,514	0	0	4,910,521	112,452,149	120,268,780
2028	1,747,370	14,004,479	4,280,673	629,389	0	0	4,910,062	112,826,176	120,642,170
2029	1,793,726	14,050,902	4,280,673	629,389	0	0	4,910,062	112,769,114	120,585,107
2030	1,745,274	14,003,108	4,280,703	629,401	0	0	4,910,104	113,166,841	120,982,892
2031	1,765,887	14,021,512	4,280,639	629,374	0	0	4,910,013	113,091,547	120,907,478
2032	1,748,993	14,004,723	4,280,643	629,379	0	0	4,910,022	112,551,102	120,367,043
2033	1,802,745	14,058,695	4,280,653	629,380	0	0	4,910,033	112,768,538	120,584,495
2034	1,746,736	14,002,200	4,280,636	629,374	0	0	4,910,010	112,626,388	120,442,312
2035	963,939	13,221,441	4,280,725	629,408	0	0	4,910,133	113,429,317	121,245,409
TOTAL	96,965,951	739,489,160	210,402,970	24,480,389	0	0	234,883,359	5,821,851,622	6,212,536,078

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)	Teerink 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	0	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	2,215,828	619,958	658,309	578,337
1979	0	0	16,237	16,237	605,136	3,431,968	973,702	760,080	724,534
1980	0	0	19,945	19,945	523,369	1,882,630	1,010,938	853,317	826,802
1981	0	0	23,841	23,841	567,692	3,920,954	1,909,144	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	124,308	866,082	381,970	362,477	337,756
1984	0	0	4,866	4,866	276,945	1,727,699	979,894	702,890	610,727
1985	0	0	10,186	10,186	453,048	3,203,407	1,633,913	1,399,915	1,398,059
1986	0	0	15,472	15,472	826,289	6,536,390	2,623,236	2,410,367	2,437,487
1987	0	0	27,222	27,222	896,645	6,175,946	2,542,870	2,242,760	2,223,871
1988	17,913	20,135	24,994	63,042	914,940	6,310,863	2,670,683	2,577,953	2,571,589
1989	26,413	46,948	10,066	83,427	1,083,175	9,548,852	4,038,403	3,985,931	3,992,184
1990	58,687	68,476	43,103	170,266	1,870,973	10,146,998	4,326,471	5,780,306	6,014,887
1991	11,125	10,117	5,875	27,117	378,980	1,924,811	493,400	907,095	1,032,092
1992	13,440	13,168	9,540	36,148	314,541	3,164,797	1,154,422	1,228,389	1,282,992
1993	(21,459)	(12,873)	(6,290)	(40,622)	(157,620)	614,977	382,424	(65,693)	(42,054)
1994	49,103	44,317	32,408	125,828	811,353	5,570,832	2,262,733	2,447,170	2,447,648
1995	19,638	20,232	11,570	51,440	250,748	3,496,664	1,477,589	854,478	779,241
1996	58,661	36,839	39,032	134,532	761,852	6,474,084	3,019,558	2,255,233	2,422,686
1997	136,523	83,141	84,875	304,539	2,133,494	10,751,975	4,121,712	3,655,892	3,956,634
1998	132,552	79,643	85,102	297,297	2,040,202	11,192,613	4,293,853	4,123,243	4,548,324
1999	112,976	73,462	75,592	262,030	1,931,853	11,578,640	4,388,376	4,442,003	4,873,453
2000	130,749	81,132	102,703	314,584	2,475,319	16,309,087	6,399,895	7,197,639	8,081,502
2001	177,891	119,998	121,533	419,422	2,930,080	23,438,934	9,404,352	11,417,813	13,316,437
2002	184,890	128,084	124,984	437,958	3,013,267	24,184,470	9,728,280	11,823,397	13,793,841
2003	189,454	134,530	126,685	450,669	3,054,227	24,455,052	9,845,935	11,958,849	13,950,568
2004	194,587	141,281	128,828	464,696	3,105,860	24,846,062	10,015,691	12,167,096	14,193,746
2005	180,617	130,079	118,616	429,312	2,859,617	23,053,545	9,229,472	11,216,843	13,085,858
2006	181,032	131,124	119,570	431,726	2,882,589	23,211,582	9,297,996	11,296,525	13,178,365
2007	183,368	132,684	120,993	437,045	2,916,883	23,475,444	9,412,111	11,437,287	13,342,830
2008	185,562	134,112	122,296	441,970	2,948,271	23,710,575	9,515,631	11,563,819	13,490,691
2009	187,804	135,570	123,628	447,002	2,980,334	23,950,560	9,619,780	11,690,524	13,638,494
2010	190,346	137,241	125,153	452,740	3,017,066	24,159,629	9,707,120	11,778,969	13,738,785
2011	192,370	138,536	126,334	457,240	3,045,523	24,438,459	9,828,099	11,942,774	13,932,563
2012	194,575	139,958	127,632	462,165	3,076,797	24,665,567	9,928,186	12,063,838	14,073,630
2013	200,402	143,978	131,299	475,679	3,165,172	25,349,253	10,226,082	12,432,860	14,505,469
2014	203,321	145,902	133,055	482,278	3,207,473	25,332,584	10,208,068	12,323,532	14,363,100
2015	205,321	147,163	134,205	486,689	3,235,190	25,873,876	10,453,206	12,709,484	14,828,206
2016	203,815	146,771	133,849	484,435	3,226,584	25,736,078	10,392,223	12,616,526	14,716,707
2017	204,164	147,022	134,079	485,265	3,232,092	25,837,090	10,436,227	12,685,157	14,799,220
2018	204,669	147,385	134,411	486,465	3,240,066	25,896,028	10,461,978	12,716,514	14,835,700
2019	204,697	147,403	134,428	486,528	3,240,474	25,896,626	10,462,116	12,715,951	14,835,050
2020	204,809	147,483	134,502	486,794	3,242,236	25,915,513	10,470,182	12,726,882	14,847,953
2021	200,207	144,168	131,479	475,854	3,169,372	25,390,471	10,240,460	12,450,913	14,526,504
2022	200,156	144,132	131,446	475,734	3,168,562	25,364,061	10,230,934	12,434,920	14,507,132
2023	200,041	144,048	131,370	475,459	3,166,738	25,362,979	10,229,105	12,435,494	14,508,318
2024	200,086	144,080	131,400	475,566	3,167,453	25,366,181	10,231,156	12,437,395	14,510,454
2025	199,811	143,884	131,219	474,914	3,163,103	25,326,856	10,213,132	12,413,514	14,482,164
2026	199,502	143,662	131,017	474,181	3,158,219	25,299,867	10,202,865	12,403,978	14,471,683
2027	199,373	143,569	130,932	473,874	3,156,181	25,265,858	10,186,952	12,379,399	14,442,010
2028	197,041	141,889	129,400	468,330	3,119,250	25,013,033	10,077,969	12,252,648	14,295,170
2029	197,028	141,880	129,392	468,300	3,119,053	25,009,518	10,075,309	12,248,395	14,289,937
2030	197,247	142,037	129,535	468,819	3,122,507	25,039,771	10,089,506	12,267,502	14,312,583
2031	196,826	141,735	129,259	467,820	3,115,861	24,942,931	10,047,605	12,205,655	14,238,653
2032	196,850	141,752	129,275	467,877	3,116,237	24,958,763	10,052,618	12,213,807	14,248,409
2033	196,915	141,798	129,317	468,030	3,117,258	24,981,514	10,062,706	12,229,802	14,267,674
2034	196,798	141,714	129,241	467,753	3,115,416	24,954,283	10,050,700	12,211,946	14,246,283
2035	197,409	142,153	129,642	469,204	3,125,082	24,929,463	10,037,260	12,169,919	14,193,172
TOTAL	7,595,305	5,483,542	5,326,902	18,405,749	134,112,135	1,008,375,706	407,216,559	479,644,608	552,676,837

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	1,034,893	3,636,671	0	1,551,015	0	0	(3,038,194)	0	69,043
1979	1,438,690	4,965,847	0	1,712,620	0	122,803	(3,159,826)	355,442	118,995
1980	1,634,049	5,416,333	0	1,733,275	0	154,695	(3,318,152)	0	36,761
1981	2,726,625	8,975,565	0	2,152,072	0	290,518	(3,678,813)	372,857	443,282
1982	2,416,093	8,325,450	0	1,489,997	0	0	(2,734,735)	0	539,246
1983	610,175	1,812,417	0	346,500	0	381,323	(5,478,333)	0	135,164
1984	1,140,652	3,457,123	0	627,129	0	0	(7,326,090)	(10,024)	237,006
1985	2,784,041	9,310,413	0	1,195,775	0	0	(10,477,628)	(56,410)	874,071
1986	5,011,171	17,000,213	(1,013,756)	2,364,991	0	0	(11,484,996)	0	1,271,720
1987	4,456,358	14,701,916	(1,025,854)	1,830,348	0	125,962	(10,805,393)	51,049	1,325,853
1988	5,149,355	16,938,297	(744,374)	2,386,714	0	0	(14,495,967)	0	1,425,495
1989	8,407,707	28,222,245	(766,443)	4,125,465	0	688,667	(18,532,961)	90,677	2,020,134
1990	13,618,890	48,329,666	(834,580)	6,505,724	0	88,709	(20,909,320)	146,026	2,855,157
1991	2,425,919	8,638,607	(269,583)	996,050	0	0	(4,884,014)	0	534,659
1992	2,570,383	8,592,923	(934,219)	1,172,568	0	153,033	(9,489,780)	(65,637)	684,549
1993	(392,056)	(1,867,627)	(56,446)	(247,770)	0	(41,430)	(7,502,549)	0	86,574
1994	5,126,251	17,771,020	(57,176)	2,466,223	0	558,615	(11,662,135)	143,482	1,181,390
1995	1,525,826	5,021,409	(1,323,035)	1,101,346	0	0	(9,742,219)	0	200,350
1996	4,426,607	14,348,408	(2,492,139)	2,247,076	0	0	(9,808,927)	0	1,126,316
1997	8,321,556	29,194,480	(2,863,241)	4,480,679	(1,649,439)	0	(10,423,076)	60,948	1,515,973
1998	9,613,073	33,819,088	(3,500,334)	5,761,185	(3,771,153)	92,835	(16,542,895)	35,650	1,578,516
1999	10,298,634	36,235,756	(4,330,823)	6,636,462	(4,146,049)	369,860	(21,876,559)	28,073	1,500,979
2000	17,176,421	60,643,056	(4,962,653)	9,994,767	(4,769,287)	695,156	(26,107,609)	461,180	3,058,623
2001	28,393,947	100,439,334	(6,053,754)	14,094,714	(5,996,928)	604,156	(30,232,917)	0	5,908,067
2002	29,415,260	104,059,157	(6,121,183)	14,606,157	(6,105,804)	0	(30,220,332)	0	6,125,985
2003	29,748,354	105,235,439	(6,110,537)	14,731,789	(6,058,568)	0	(30,050,635)	271,498	6,208,921
2004	30,267,275	107,071,625	(6,115,586)	15,011,156	(5,995,990)	275,922	(30,249,180)	0	6,308,767
2005	27,905,369	98,716,993	(6,141,290)	13,869,772	(6,091,637)	0	(30,216,182)	9,690	5,805,328
2006	28,102,180	99,412,460	(6,116,821)	13,931,637	(6,118,648)	0	(30,070,186)	194,953	5,860,087
2007	28,453,243	100,654,822	(6,130,736)	14,114,597	(5,920,651)	237,444	(30,294,785)	0	5,930,057
2008	28,768,696	101,770,882	(6,146,926)	14,304,048	(5,875,772)	0	(30,292,939)	26,063	5,983,049
2009	29,083,846	102,885,989	(6,087,237)	14,433,492	(5,931,113)	197,393	(30,285,296)	0	6,059,045
2010	29,295,389	103,629,194	(6,030,173)	14,463,896	(5,901,679)	1,075,894	(30,280,393)	0	6,128,464
2011	29,710,843	105,103,361	(6,133,270)	14,738,582	(6,089,729)	41,660	(30,120,529)	164,047	6,191,568
2012	30,011,749	106,167,852	(6,160,621)	14,947,316	(6,080,194)	0	(30,236,544)	0	6,231,040
2013	30,933,503	109,430,491	(6,155,778)	15,380,541	(6,127,853)	0	(30,220,003)	0	6,434,809
2014	30,618,498	108,291,089	(5,846,833)	14,779,732	(5,839,009)	382,470	(30,131,883)	122,256	6,520,795
2015	31,621,847	111,865,822	(6,164,492)	15,726,561	(6,081,360)	0	(30,240,573)	0	6,577,132
2016	31,381,451	111,010,035	(6,100,235)	15,529,554	(5,839,653)	868,546	(30,314,648)	0	6,552,008
2017	31,559,450	111,643,744	(6,145,560)	15,673,651	(6,126,720)	204,316	(30,217,159)	0	6,570,847
2018	31,637,293	111,919,213	(6,159,981)	15,737,504	(6,087,285)	0	(30,208,128)	44,692	6,577,035
2019	31,635,711	111,913,483	(6,141,818)	15,707,200	(6,156,702)	242,111	(30,194,919)	7,000	6,587,907
2020	31,663,468	112,012,037	(6,154,368)	15,729,987	(6,105,338)	0	(30,149,231)	137,965	6,591,501
2021	30,978,422	109,589,124	(6,157,713)	15,403,357	(5,929,515)	0	(30,287,771)	20,261	6,443,331
2022	30,936,663	109,440,359	(6,149,023)	15,371,050	(6,021,137)	200,102	(30,260,458)	0	6,438,353
2023	30,939,338	109,450,737	(6,153,148)	15,376,737	(5,967,769)	0	(30,233,254)	82,970	6,437,990
2024	30,943,936	109,466,808	(6,160,183)	15,396,339	(5,976,536)	42,488	(30,291,430)	0	6,432,139
2025	30,883,323	109,251,998	(6,097,685)	15,335,425	(5,981,105)	18,781	(30,179,915)	156,921	6,430,578
2026	30,861,227	109,174,618	(6,163,221)	15,359,516	(5,990,136)	0	(30,285,449)	0	6,413,426
2027	30,797,420	108,947,320	(6,087,884)	15,281,626	(5,984,288)	288,430	(30,232,717)	57,395	6,416,505
2028	30,484,900	107,843,366	(6,162,657)	15,164,874	(6,051,955)	0	(30,241,046)	18,792	6,338,197
2029	30,473,788	107,803,691	(6,109,740)	15,145,202	(6,023,478)	0	(30,205,527)	87,325	6,341,036
2030	30,522,302	107,975,769	(6,119,845)	15,189,613	(6,174,827)	0	(30,207,784)	0	6,344,385
2031	30,362,999	107,409,204	(6,115,691)	15,046,180	(5,887,593)	0	(30,156,853)	245,311	6,334,005
2032	30,384,103	107,484,482	(6,081,112)	15,070,607	(5,987,110)	224,911	(30,270,037)	0	6,332,470
2033	30,425,684	107,632,635	(6,090,006)	15,102,939	(5,993,343)	70,323	(30,271,099)	0	6,337,413
2034	30,379,663	107,468,829	(6,089,015)	15,071,081	(6,010,660)	0	(30,179,138)	126,560	6,330,405
2035	30,263,207	107,050,213	(6,120,644)	15,168,649	(5,988,737)	0	(30,308,089)	0	6,240,893
TOTAL	1,175,259,856	4,146,126,169	(239,249,422)	590,927,193	(224,834,750)	9,215,939	(1,305,861,638)	3,660,279	244,636,620

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: "Reservior 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 reservior.

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)							Grand Total (26)
	Reach 29G	Reach 29H	Reach 29J	Reach 30	Reach 31A	Reach 33A	Total (25)	
	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 PPs San Luis Obispo Pwp (24)		
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	0	223,117
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	1,061,100	(1,542,479)	0	183,605	0	7,028,086	7,636,133
1979	0	0	(2,384,748)	(12,206)	195,432	0	9,243,333	9,864,706
1980	0	456,892	(984,154)	10,716	168,458	0	9,882,560	10,425,874
1981	0	0	(3,201,635)	0	169,177	0	16,638,924	17,230,457
1982	(783,626)	0	(3,463,971)	0	168,390	0	12,872,176	13,415,482
1983	(843,635)	69,052	(4,369,426)	(1,588,382)	18,256	0	(6,958,604)	(6,831,961)
1984	(1,991,601)	0	(1,820,263)	(1,669,438)	132,218	0	(3,202,078)	(2,920,267)
1985	(5,930,176)	0	(16,316,559)	0	149,544	0	(10,831,635)	(10,368,401)
1986	(5,579,301)	0	(11,072,448)	0	298,277	0	10,803,351	11,645,112
1987	(6,304,152)	70,801	(11,562,269)	(38,584)	248,062	0	6,259,544	7,183,411
1988	(6,993,235)	55,148	(12,292,638)	(200,793)	220,345	0	5,579,435	6,557,417
1989	(8,235,085)	14,450	(14,514,469)	131,596	288,557	0	23,505,910	24,672,512
1990	(11,011,065)	0	(20,116,506)	241,348	386,599	0	45,569,310	47,610,549
1991	(3,600,008)	440,066	(6,814,919)	0	3,609	0	1,827,784	2,233,881
1992	(5,148,255)	0	(9,335,078)	(893,645)	63,423	0	(5,799,135)	(5,448,446)
1993	(3,700,155)	(677,666)	(8,306,381)	(2,840,275)	(49,970)	0	(24,706,097)	(24,904,339)
1994	(5,756,236)	130,797	(10,560,317)	(123,588)	206,617	0	12,153,326	13,090,507
1995	(1,412,693)	0	(3,608,979)	0	114,674	0	(1,515,349)	(1,213,161)
1996	(4,603,709)	0	(8,847,751)	0	262,270	0	10,829,712	11,726,096
1997	(5,640,226)	0	(10,438,677)	0	384,718	1,328,468	36,758,376	39,196,409
1998	(6,137,857)	0	(11,300,945)	1,701	371,053	1,272,579	35,450,529	37,788,028
1999	(7,129,427)	0	(11,421,999)	48,398	539,095	1,214,079	33,248,951	35,442,834
2000	(10,943,210)	0	(17,892,764)	0	687,353	1,525,028	67,554,184	70,344,087
2001	(17,749,300)	0	(28,763,112)	348,919	794,333	1,846,364	121,211,359	124,560,861
2002	(17,848,958)	0	(28,978,152)	0	816,885	1,898,785	127,177,788	130,629,013
2003	(17,856,490)	0	(28,978,751)	2,418	827,990	1,924,595	130,106,427	133,611,323
2004	(17,843,923)	0	(28,956,415)	41,262	841,987	1,957,132	133,836,627	137,407,183
2005	(17,824,823)	0	(28,939,511)	56,173	775,231	1,801,962	116,312,793	119,601,722
2006	(17,859,136)	0	(28,979,353)	1,618	781,459	1,816,440	117,941,158	121,255,473
2007	(17,856,187)	0	(28,974,924)	0	790,756	1,838,047	120,509,355	123,863,283
2008	(17,818,488)	0	(28,924,383)	75,771	799,265	1,857,827	122,807,809	126,198,050
2009	(17,848,118)	0	(28,972,973)	0	807,957	1,878,032	125,120,375	128,547,711
2010	(17,841,248)	0	(28,951,685)	37,140	817,916	1,901,177	127,728,395	131,198,201
2011	(17,854,982)	0	(28,974,677)	0	825,630	1,919,110	129,663,509	133,166,272
2012	(17,766,751)	0	(28,864,908)	175,342	834,108	1,938,818	131,928,428	135,467,390
2013	(17,849,517)	0	(28,973,285)	0	858,066	1,994,506	138,219,144	141,859,995
2014	(17,854,940)	0	(28,974,713)	0	869,534	2,021,161	137,185,441	140,875,192
2015	(17,857,830)	0	(28,975,509)	0	877,048	2,038,627	143,252,045	146,973,924
2016	(17,817,079)	0	(28,940,501)	57,972	874,715	2,033,205	142,756,904	146,467,923
2017	(17,859,715)	0	(28,975,715)	0	876,208	2,036,676	142,997,717	146,715,074
2018	(17,839,617)	0	(28,934,413)	76,531	878,370	2,041,698	143,593,132	147,319,663
2019	(17,853,273)	0	(28,974,299)	0	878,480	2,041,956	143,602,580	147,329,582
2020	(17,848,531)	0	(28,974,296)	0	878,958	2,043,068	143,785,750	147,514,780
2021	(17,848,161)	0	(28,974,379)	0	859,205	1,997,153	138,701,662	142,346,888
2022	(17,835,165)	0	(28,959,442)	24,898	858,985	1,996,643	138,578,875	142,223,171
2023	(17,846,208)	0	(28,973,771)	0	858,491	1,995,492	138,503,501	142,145,698
2024	(17,816,966)	0	(28,941,323)	54,260	858,685	1,995,942	138,549,345	142,192,364
2025	(17,844,837)	0	(28,973,408)	0	857,505	1,993,203	138,286,450	141,924,467
2026	(17,816,966)	0	(28,941,423)	53,832	856,181	1,990,125	137,890,123	141,522,523
2027	(17,844,802)	0	(28,973,361)	0	855,629	1,988,839	137,784,331	141,414,386
2028	(17,843,039)	0	(28,960,490)	23,943	845,617	1,965,568	135,064,890	138,652,470
2029	(17,832,438)	0	(28,972,034)	0	845,563	1,965,445	135,141,992	138,729,345
2030	(17,845,895)	0	(28,959,170)	27,271	846,500	1,967,621	135,275,302	138,866,628
2031	(17,849,948)	0	(28,972,449)	4,011	844,698	1,963,435	134,662,153	138,245,834
2032	(17,837,360)	0	(28,961,467)	20,782	844,800	1,963,671	134,662,337	138,246,451
2033	(17,848,487)	0	(28,974,153)	0	845,077	1,964,313	134,742,992	138,328,280
2034	(17,850,813)	0	(28,961,566)	23,823	844,578	1,963,153	134,580,112	138,163,281
2035	(17,568,477)	0	(28,483,958)	825,898	847,198	1,969,243	135,225,210	138,819,496
TOTAL	(725,818,542)	1,537,358	(1,222,651,998)	(4,402,699)	35,276,518	73,849,186	5,005,583,779	5,158,101,663

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)	12,851,158	(14,650,000)	(1,500,000)	2,131,286	6,481,130
1979	9,030,801	0	9,547,014	(14,650,000)	(1,500,000)	2,131,884	4,559,699
1980	10,372,763	0	13,296,244	(14,650,000)	(1,500,000)	3,638,851	11,157,858
1981	11,189,911	0	10,393,759	(14,650,000)	(1,500,000)	4,597,474	10,031,144
1982	16,634,428	0	16,246,788	(14,650,000)	(1,500,000)	4,594,682	21,325,898
1983	12,039,290	0	22,255,887	(34,705,000)	(8,735,000)	3,751,993	(5,392,830)
1984	8,021,913	0	22,952,964	(14,650,000)	(10,348,000)	3,743,484	9,720,361
1985	10,421,857	0	23,933,169	(14,650,000)	(8,079,000)	3,675,801	15,301,827
1986	18,964,554	0	27,117,575	(14,650,000)	(9,107,000)	2,478,330	24,803,459
1987	29,050,381	0	24,567,391	(14,650,000)	(9,451,000)	1,766,739	31,283,511
1988	26,611,443	0	27,345,974	(14,650,000)	(8,677,000)	1,813,458	32,443,875
1989	8,221,806	0	29,273,576	(14,650,000)	(8,104,000)	2,676,313	17,417,695
1990	25,937,022	0	39,164,914	(14,650,000)	(8,497,000)	1,441,262	43,396,198
1991	34,005,464	0	77,844,640	(14,650,000)	(9,487,000)	1,728,338	89,441,442
1992	24,257,036	0	35,582,931	(14,650,000)	(8,526,000)	1,717,617	38,381,584
1993	19,288,277	0	37,131,882	(14,650,000)	(8,768,000)	1,706,613	34,708,772
1994	14,185,193	0	39,200,739	(14,650,000)	(7,484,000)	2,129,763	33,381,695
1995	14,138,064	0	45,469,500	(14,650,000)	(7,041,000)	2,050,101	39,966,665
1996	12,933,174	0	53,526,977	(14,650,000)	(7,288,000)	6,182,000	50,704,151
1997	11,364,640	0	54,375,409	(14,650,000)	(7,009,000)	6,405,000	50,486,049
1998	12,908,116	0	53,083,230	(14,650,000)	(6,700,000)	8,047,000	52,688,346
1999	25,010,714	0	49,261,229	(14,650,000)	(6,700,000)	12,031,000	64,952,943
2000	21,374,903	0	50,862,687	(14,650,000)	(6,700,000)	14,131,000	65,018,590
2001	10,507,593	0	50,545,210	(14,650,000)	(6,700,000)	5,851,000	45,553,803
2002	4,027,493	0	50,744,577	(14,650,000)	(6,700,000)	5,851,000	39,273,070
2003	103,200	0	50,865,004	(14,650,000)	(6,700,000)	5,851,000	35,469,204
2004	0	0	51,642,500	(14,650,000)	(6,700,000)	2,851,000	33,143,500
2005	0	0	50,850,948	(14,650,000)	(6,700,000)	2,851,000	32,351,948
2006	0	0	51,134,878	(14,650,000)	(6,700,000)	2,851,000	32,635,878
2007	0	0	51,398,648	(14,650,000)	(6,700,000)	2,851,000	32,899,648
2008	0	0	51,088,052	(14,650,000)	(6,700,000)	2,851,000	32,589,052
2009	0	0	51,319,954	(14,650,000)	(6,700,000)	2,851,000	32,820,954
2010	0	0	51,787,957	(14,650,000)	(6,700,000)	2,851,000	33,288,957
2011	0	0	46,905,425	(14,650,000)	(6,700,000)	0	25,555,425
2012	0	0	46,610,972	(14,650,000)	(6,700,000)	0	25,260,972
2013	0	0	46,597,817	(14,650,000)	(6,700,000)	0	25,247,817
2014	0	0	47,286,664	(14,650,000)	(6,700,000)	0	25,936,664
2015	0	0	46,861,579	(14,650,000)	(6,700,000)	0	25,511,579
2016	0	0	47,351,935	(14,650,000)	(6,700,000)	0	26,001,935
2017	0	0	47,150,188	(14,650,000)	(6,700,000)	0	25,800,188
2018	0	0	47,124,601	(14,650,000)	(6,700,000)	0	25,774,601
2019	0	0	47,172,265	(14,650,000)	(6,700,000)	0	25,822,265
2020	0	0	47,056,041	(14,650,000)	(6,700,000)	0	25,706,041
2021	0	0	46,181,106	(14,650,000)	(6,700,000)	0	24,831,106
2022	0	0	45,741,609	(14,650,000)	(6,700,000)	0	24,391,609
2023	0	0	46,033,133	(14,650,000)	(6,700,000)	0	24,683,133
2024	0	0	45,925,536	(14,650,000)	(6,700,000)	0	24,575,536
2025	0	0	46,131,753	(14,650,000)	(6,700,000)	0	24,781,753
2026	0	0	45,721,516	(14,650,000)	(6,700,000)	0	24,371,516
2027	0	0	46,090,799	(14,650,000)	(6,700,000)	0	24,740,799
2028	0	0	45,713,304	(14,650,000)	(6,700,000)	0	24,363,304
2029	0	0	46,016,873	(14,650,000)	(6,700,000)	0	24,666,873
2030	0	0	45,694,128	(14,650,000)	(6,700,000)	0	24,344,128
2031	0	0	45,291,438	(14,650,000)	(6,700,000)	0	23,941,438
2032	0	0	45,732,124	(14,650,000)	(6,700,000)	0	24,382,124
2033	0	0	45,707,744	(14,650,000)	(6,700,000)	0	24,357,744
2034	0	0	45,684,312	(14,650,000)	(6,700,000)	0	24,334,312
2035	0	0	46,925,426	(14,650,000)	(6,700,000)	0	25,575,426
TOTAL	999,425,177	(11,528,320)	2,504,127,826	(1,002,213,000)	(400,701,000)	139,232,039	2,228,342,722

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 (1995) are reflected in the Delta Water Charge.

TABLE B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (a (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1952	0	0	0	83	114	410	607	121	224	345
1953	0	0	0	324	479	1,808	2,611	336	620	956
1954	0	0	0	819	1,305	5,150	7,274	421	777	1,198
1955	0	0	0	976	1,570	6,297	8,843	211	390	601
1956	0	0	0	8,844	14,459	63,816	87,119	226	418	644
1957	15,199	11,435	26,634	21,563	35,239	649,598	706,400	290	536	826
1958	33,420	16,591	50,011	67,764	71,717	733,415	872,896	719	1,328	2,047
1959	20,697	6,591	27,288	154,254	143,731	493,049	791,034	10,635	69,139	79,774
1960	9,097	8,830	17,927	296,491	275,611	1,018,661	1,590,763	15,252	99,794	115,046
1961	6,950	7,445	14,395	853,505	802,675	1,914,709	3,570,889	10,158	36,681	46,839
1962	(195)	(925)	(1,120)	545,122	615,142	1,686,043	2,846,307	17,271	39,570	56,841
1963	1,320	1,110	2,430	657,426	1,281,271	3,243,839	5,182,536	68,811	140,841	209,652
1964	38,392	35,467	73,859	712,650	1,747,783	7,251,800	9,712,233	138,608	282,003	420,611
1965	198,833	62,221	261,054	360,779	606,026	3,414,457	4,381,262	250,677	497,152	747,829
1966	461,619	49,917	511,536	592,714	592,598	2,245,216	3,430,528	587,639	1,117,486	1,705,125
1967	1,569,498	40,379	1,609,877	796,993	803,951	2,401,863	4,002,807	936,112	1,762,694	2,698,806
1968	859,613	61,691	921,304	736,470	696,074	1,997,925	3,430,469	351,092	675,220	1,026,312
1969	74,389	59,317	133,706	269,698	293,274	764,952	1,327,924	76,956	164,583	241,539
1970	43,362	67,876	111,238	58,677	61,200	135,569	255,446	47,883	109,224	157,107
1971	26,764	34,051	60,815	12,086	18,227	84,089	114,402	28,635	80,715	109,350
1972	19,643	18,905	38,548	12,291	12,762	63,612	88,665	19,288	50,230	69,518
1973	56,510	30,874	87,384	10,494	12,137	39,380	62,011	23,009	56,178	79,187
1974	165,830	65,832	231,662	15,721	24,402	73,121	113,244	25,035	61,383	86,418
1975	91,825	89,233	181,058	16,730	15,807	41,394	73,931	14,739	61,416	76,155
1976	57,766	83,650	141,416	34,004	34,663	109,610	178,277	33,633	130,440	164,073
1977	64,167	80,147	144,314	46,229	45,116	133,374	224,719	108,319	264,720	373,039
1978	69,319	81,717	151,036	71,234	66,008	174,897	312,139	21,412	103,822	125,234
1979	191,272	282,908	474,180	45,469	42,942	110,667	199,078	22,940	125,669	148,609
1980	264,433	386,006	650,439	134,522	124,352	304,615	563,489	103,257	462,894	566,151
1981	227,606	383,086	610,692	(33,738)	(29,856)	(65,637)	(129,231)	(15,416)	(135,240)	(150,656)
1982	549,164	870,611	1,419,775	7,875	8,322	27,065	43,262	4,101	(58,881)	(54,780)
1983	1,254,900	1,433,061	2,687,961	138,412	131,516	339,246	609,174	32,194	110,288	142,482
1984	2,547,878	2,750,040	5,297,918	152,991	140,971	351,920	645,882	35,447	107,727	143,174
1985	7,143,121	6,443,613	13,586,734	19,777	19,245	53,490	92,512	17,423	78,901	96,324
1986	10,565,937	16,926,630	27,492,567	32,033	31,581	88,068	151,682	44,133	306,453	350,586
1987	7,979,816	12,599,438	20,579,254	50,153	48,674	138,959	237,786	126,993	1,342,116	1,469,109
1988	2,312,677	4,340,303	6,652,980	116,192	112,304	302,490	530,986	156,463	1,479,306	1,635,769
1989	1,224,591	1,600,424	2,825,015	108,509	102,986	260,626	472,121	152,213	1,210,679	1,362,892
1990	443,046	894,522	1,337,568	217,588	218,030	609,368	1,044,986	220,045	1,550,284	1,770,329
1991	100,161	97,386	197,547	413,831	383,808	947,640	1,745,279	298,650	2,185,654	2,484,304
1992	58,187	77,102	135,289	184,684	172,485	449,177	806,346	381,503	3,533,982	3,915,485
1993	122,595	180,692	303,287	130,295	126,275	345,124	601,694	1,329,917	12,527,287	13,857,204
1994	72,920	176,197	249,117	50,990	62,663	241,048	354,701	5,198,511	50,432,072	55,630,583
1995	45,663	92,543	138,206	104,553	103,686	277,170	485,409	14,844,974	146,568,969	161,413,943
1996	80,458	61,542	142,000	14,845	15,796	46,041	76,682	14,691,055	168,941,389	183,632,444
1997	362,273	333,727	696,000	37,346	35,974	94,063	167,383	217,703	2,289,757	2,507,460
1998	410,318	967,682	1,378,000	26,769	25,387	63,716	115,872	110,554	937,461	1,048,015
1999	2,983	7,072	10,055	17,652	16,135	38,505	72,292	56,268	409,342	465,610
2000	32	77	109	517	472	1,125	2,114	19,327	137,500	156,827
2001	32	77	109	517	472	1,125	2,114	11,922	89,891	101,813
2002	32	77	109	517	472	1,125	2,114	3,871	7,141	11,012
2003	0	0	0	0	0	0	0	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	39,844,113	51,817,170	91,661,283	8,326,240	10,168,033	33,774,790	52,269,063	40,851,536	400,448,225	441,299,761

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)	Agri-cultural (16)	County of Kings (17)	Oak Flat Water District (18)	Tulare Lake Basin Water Storage District (19)	Total (20)
1952	389	19	59	938	120	9,127	19	13	784	11,468
1953	1,076	53	161	2,888	344	27,381	56	33	2,158	34,150
1954	1,350	67	200	3,374	416	32,371	70	42	2,719	40,609
1955	676	36	100	1,498	198	14,718	36	22	1,371	18,655
1956	727	33	107	2,703	272	24,257	34	26	1,416	29,575
1957	932	38	139	6,047	495	49,932	38	30	1,707	59,358
1958	2,308	100	345	14,372	1,154	119,049	103	61	4,367	141,859
1959	7,384	363	2,517	26,219	2,597	253,890	372	381	14,757	308,480
1960	12,940	629	3,666	34,053	4,155	352,167	644	498	25,696	434,448
1961	21,849	1,063	3,957	51,406	6,500	538,710	1,087	599	43,376	668,547
1962	49,320	2,410	7,866	94,932	13,836	1,017,145	2,466	1,879	98,141	1,287,995
1963	208,758	10,686	32,171	364,014	55,715	3,934,637	10,933	5,990	425,330	5,048,234
1964	328,285	16,961	64,891	600,151	88,904	6,636,279	17,349	11,942	672,011	8,436,773
1965	538,215	27,481	117,998	1,098,999	152,931	11,999,894	28,115	21,802	1,095,126	15,080,561
1966	1,107,759	52,587	279,171	2,218,832	339,222	24,857,488	53,788	38,891	2,173,090	31,120,828
1967	852,537	39,539	445,560	2,012,745	286,990	23,629,027	40,444	34,775	1,653,428	28,995,045
1968	198,739	9,739	166,266	1,104,133	70,088	11,544,940	9,962	12,237	396,074	13,512,178
1969	94,436	4,794	35,472	616,518	27,216	6,416,146	4,902	7,302	191,574	7,398,360
1970	54,345	2,719	21,684	414,660	15,521	4,145,045	2,783	3,999	109,471	4,770,227
1971	25,462	1,290	12,094	190,552	7,112	1,622,275	1,320	540	51,620	1,912,265
1972	11,589	589	8,354	82,884	3,409	723,623	601	343	23,526	854,918
1973	6,657	336	10,202	39,975	1,976	458,532	341	220	13,449	531,688
1974	9,478	469	11,044	45,421	2,767	483,865	478	326	18,981	572,829
1975	13,328	678	5,245	36,469	3,710	382,745	692	426	27,049	470,342
1976	17,507	837	12,616	53,085	5,621	654,024	856	1,152	34,454	780,152
1977	9,671	437	47,790	36,478	3,753	886,672	445	494	18,496	1,004,236
1978	23,499	(30,407)	6,178	54,218	6,579	575,170	1,208	1,402	47,447	685,294
1979	25,051	1,295	5,665	53,867	6,609	559,748	1,324	1,862	51,294	706,715
1980	144,981	(4,617)	31,161	321,889	38,126	3,211,810	7,682	7,144	297,216	4,055,392
1981	(5,425)	(15,463)	202	(44,618)	(1,220)	(384,347)	(297)	1,753	(11,323)	(460,435)
1982	49,915	2,584	6,601	83,284	13,142	602,098	2,638	1,252	102,288	916,396
1983	52,429	(35,296)	12,122	110,474	13,872	1,035,024	2,769	1,327	107,337	1,338,612
1984	86,347	4,474	14,302	155,328	22,775	1,621,389	4,571	2,678	177,023	2,088,908
1985	25,437	1,311	5,648	47,055	6,765	466,643	1,342	1,176	52,014	625,235
1986	38,311	(41,067)	9,864	71,706	10,321	796,426	2,008	777	78,142	966,522
1987	28,769	1,476	7,004	55,535	7,968	616,849	1,509	1,491	58,679	779,280
1988	52,333	2,831	17,080	70,579	12,050	892,291	2,894	4,621	109,718	1,181,253
1989	156,180	8,022	27,589	352,277	42,965	3,817,088	8,204	12,137	318,765	4,762,745
1990	290,173	15,027	49,697	548,323	86,585	5,696,036	15,372	22,677	594,746	7,656,684
1991	349,596	18,112	60,488	580,972	91,819	6,079,615	18,525	23,493	716,658	8,315,351
1992	127,048	6,496	28,489	244,010	34,886	1,960,563	6,644	10,926	258,716	3,460,417
1993	86,617	4,400	30,423	175,646	23,982	1,398,907	4,499	4,715	175,803	2,579,322
1994	91,654	4,719	22,454	167,855	24,661	1,516,300	4,826	2,878	187,272	2,422,825
1995	92,814	(496)	30,384	185,442	27,076	459,942	4,871	3,251	189,388	2,698,751
1996	17,946	922	6,715	30,872	4,814	962,212	943	1,557	36,633	481,922
1997	59,435	3,077	14,767	97,320	15,633	983,183	3,148	5,636	121,800	1,455,444
1998	42,249	2,190	11,952	68,885	11,084	385,439	2,238	4,028	86,623	1,050,144
1999	29,015	1,505	9,578	46,905	7,585	204,246	1,540	2,812	59,531	734,008
2000	222	12	3,465	387	58	0	12	22	455	47,685
2001	222	12	1,849	387	0	0	12	22	455	27,713
2002	222	12	1,849	387	0	0	12	22	455	27,713
2003	0	0	0	0	0	0	0	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	5,440,757	125,084	1,705,201	12,632,331	1,603,273	139,163,614	276,428	263,682	10,917,306	172,127,676

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; and $5,261 in 1995 in accordance with letters of agreement with the district.

c) Costs related to maximum annual entitlement of 15,000 acre-feet under Amendment No. 18 of the water supply contract with Kern County Water Agency.

TABLE B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (21)	Castaic Lake Water Agency (d (22)	Coachella Valley Water District (23)	Crestline-Lake Arrowhead Water Agency (24)	Desert Water Agency (25)	Littlerock Creek Irrigation District (26)	Mojave Water Agency (27)	Palmdale Water District (28)	San Bernardino Valley Municipal Water District (29)	San Gabriel Valley Municipal Water District (30)
1952	3,157	1,044	850	252	1,405	72	1,695	418	6,079	1,547
1953	10,024	3,326	2,667	800	4,401	221	5,322	1,327	19,058	4,855
1954	12,741	4,194	3,464	1,032	5,714	286	6,911	1,692	24,608	6,289
1955	5,411	1,879	1,376	398	2,266	115	2,753	713	9,227	2,376
1956	9,773	3,588	2,197	615	3,621	192	4,449	1,268	13,136	3,437
1957	26,304	9,255	6,342	1,818	10,462	541	12,769	3,451	40,646	10,536
1958	49,201	17,599	11,582	3,291	19,099	990	23,359	6,416	72,709	18,896
1959	70,246	29,741	15,870	4,614	26,170	1,346	31,757	9,029	98,594	25,519
1960	84,550	38,759	22,068	6,794	36,393	1,548	43,258	10,770	147,170	37,468
1961	126,540	54,258	34,617	12,534	57,086	2,250	63,709	16,436	236,163	57,706
1962	198,556	85,350	43,721	13,859	72,100	3,347	84,710	24,943	253,432	64,329
1963	580,138	255,252	116,797	33,149	192,624	9,829	234,926	73,257	610,278	160,623
1964	1,094,365	501,857	209,460	55,448	345,447	18,442	429,607	137,768	1,026,065	276,115
1965	1,908,076	947,523	385,531	103,756	635,821	32,818	786,986	244,589	1,913,091	512,861
1966	3,960,301	2,150,974	812,657	215,858	1,340,233	69,326	1,664,584	517,268	3,943,586	1,062,420
1967	4,976,539	4,100,533	1,077,423	296,069	1,776,895	88,302	2,182,238	653,250	5,821,682	1,550,237
1968	5,924,471	3,998,943	1,350,742	368,157	2,227,645	107,350	2,738,008	783,940	7,982,824	2,122,941
1969	5,822,708	3,079,427	1,690,259	539,852	2,787,631	121,302	3,256,507	865,454	10,898,186	2,769,647
1970	5,032,961	3,277,780	2,050,790	695,344	3,382,250	106,383	3,872,369	736,777	13,795,811	3,457,106
1971	2,577,508	2,146,955	1,071,521	338,583	1,767,179	48,337	2,087,224	347,057	8,137,052	1,987,119
1972	973,434	283,255	331,757	92,077	547,138	19,134	668,550	134,359	2,691,133	697,957
1973	354,409	914,305	158,582	82,223	261,558	6,304	238,095	46,103	1,760,569	403,583
1974	451,451	280,865	259,176	74,112	427,434	8,143	518,452	59,144	1,617,393	425,927
1975	253,437	246,493	193,631	52,820	319,338	4,954	392,109	33,995	1,533,663	407,917
1976	237,537	255,240	136,750	37,235	225,528	4,245	277,805	31,001	962,276	255,900
1977	199,550	371,467	91,384	25,857	150,713	3,755	183,607	26,835	591,447	155,535
1978	302,110	470,179	78,574	22,228	129,585	5,233	157,814	38,655	428,988	111,769
1979	358,559	938,984	81,968	21,835	135,178	5,978	167,263	44,519	404,284	108,604
1980	1,869,024	1,777,296	424,041	113,270	699,331	32,461	864,671	241,087	2,042,591	548,586
1981	(157,317)	610,948	(46,774)	(8,623)	(77,138)	(2,553)	(102,042)	(19,413)	(139,558)	(42,372)
1982	1,569,274	861,927	301,121	80,161	496,599	26,427	617,831	198,097	1,443,678	394,372
1983	2,079,588	521,364	399,680	117,851	659,150	34,980	810,344	262,082	2,164,833	592,242
1984	1,525,240	296,310	300,341	86,382	495,325	27,388	611,352	189,426	1,569,317	429,633
1985	902,818	158,809	222,924	64,061	367,645	13,382	453,249	108,692	1,149,265	314,123
1986	899,423	104,913	244,042	63,968	402,479	10,676	501,896	103,893	1,169,204	319,268
1987	346,816	105,630	197,849	52,125	326,290	6,001	405,991	43,546	962,812	262,096
1988	273,484	174,177	96,823	30,867	159,683	4,196	192,103	30,642	705,196	188,377
1989	1,064,174	434,698	353,016	105,177	582,191	17,800	710,807	130,276	2,021,219	545,665
1990	647,079	366,272	366,104	107,522	603,779	7,440	740,473	67,002	2,225,413	602,287
1991	840,889	402,905	404,966	133,112	667,866	12,241	809,062	94,229	2,919,880	793,191
1992	645,238	361,236	292,159	143,356	481,833	9,777	539,617	78,357	2,682,559	732,301
1993	639,795	333,564	234,033	189,160	385,972	10,294	363,835	74,685	8,125,615	2,192,865
1994	514,859	178,525	144,540	101,019	238,373	8,060	239,504	59,200	5,369,046	1,446,637
1995	491,737	248,500	135,864	71,474	224,071	7,972	245,912	58,315	17,131,824	667,294
1996	41,137	45,028	27,489	23,948	45,338	722	41,335	5,343	3,425,735	918,865
1997	111,437	490,644	25,295	13,289	41,718	1,898	46,258	14,161	1,001,386	269,298
1998	78,662	43,506	15,139	3,917	24,966	1,331	31,377	9,952	70,969	19,392
1999	52,526	31,077	9,790	2,503	16,149	883	20,348	6,621	44,997	12,329
2000	1,157	5,482	210	53	345	19	434	145	936	257
2001	1,157	3,125	210	53	345	19	434	145	936	257
2002	1,157	3,125	210	53	345	19	434	145	936	257
2003	0	0	0	0	0	0	0	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	50,043,411	32,028,086	14,390,828	4,595,308	23,733,569	902,176	28,282,061	6,607,062	121,127,939	27,906,439

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				South Bay Area Future Contractor (39)	Grand Total (40)
	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)		
1952	963	69,021	371	86,874	0	0	0	0	59	99,353
1953	3,011	217,635	1,186	273,833	0	0	0	0	263	311,813
1954	3,903	279,966	1,492	352,292	0	0	0	0	767	402,140
1955	1,473	111,618	671	140,276	0	0	0	0	969	169,344
1956	2,123	179,340	1,299	225,038	0	0	0	0	9,173	351,549
1957	6,526	516,047	3,365	648,062	0	0	0	0	23,173	1,464,453
1958	11,701	945,682	6,392	1,186,917	0	0	2	2	32,888	2,286,620
1959	15,817	1,364,307	9,893	1,702,903	0	0	14	14	57,919	2,967,412
1960	23,309	1,914,533	12,799	2,379,419	0	0	28	28	123,202	4,660,833
1961	36,154	3,212,117	18,768	3,928,338	0	0	10	10	316,221	8,545,239
1962	40,012	3,543,478	29,068	4,456,905	0	0	32	32	228,201	8,875,161
1963	99,266	11,185,924	86,806	13,638,869	0	0	51	51	528,495	24,610,267
1964	170,010	18,065,460	164,709	22,494,753	0	0	7,791	7,791	590,035	41,736,055
1965	316,082	33,763,578	307,475	41,858,187	0	0	3,139	3,139	332,680	62,664,712
1966	654,195	74,485,021	681,899	91,558,322	0	0	(48)	(48)	783,728	129,110,019
1967	958,408	130,599,410	1,279,076	155,360,062	0	0	47	47	1,479,421	194,146,065
1968	1,314,842	147,502,292	1,360,688	177,782,843	0	0	51,573	51,573	1,254,192	197,978,871
1969	1,726,890	140,096,647	1,085,028	174,739,538	0	0	234,232	234,232	398,182	184,473,481
1970	2,160,120	161,983,071	1,147,608	201,698,370	0	0	16,227	16,227	74,028	207,082,643
1971	1,237,575	133,903,313	738,824	156,388,247	0	0	27,204	27,204	12,456	158,624,739
1972	434,505	43,931,762	66,878	50,871,939	0	0	9	9	13,183	51,936,780
1973	256,715	39,722,992	290,020	44,495,458	0	0	25	25	8,098	45,263,851
1974	264,348	18,896,593	86,361	23,369,399	0	0	45	45	28,569	24,402,166
1975	253,840	16,732,933	83,976	20,509,106	0	0	21	21	8,224	21,318,837
1976	158,851	13,545,457	84,624	16,212,449	0	0	51	51	16,485	17,492,903
1977	96,516	11,769,364	110,830	13,776,860	0	0	28	28	21,182	15,544,378
1978	69,151	15,781,693	174,876	17,770,855	0	0	38	38	28,876	19,073,472
1979	66,968	27,631,258	343,358	30,308,756	0	0	23	23	26,667	31,864,028
1980	338,118	59,503,595	641,585	69,095,656	0	0	26	26	59,168	74,990,321
1981	(25,627)	15,688,463	224,312	15,902,306	0	0	34	34	(6,747)	15,765,660
1982	242,546	30,993,113	316,107	37,541,253	0	0	11	11	16,086	39,829,409
1983	364,305	25,262,763	187,127	33,456,309	0	0	19	19	72,225	38,268,228
1984	264,154	16,453,076	103,355	22,351,299	0	0	26	26	83,253	30,610,439
1985	193,149	10,416,317	56,159	14,420,593	0	0	29	29	16,338	28,819,921
1986	196,388	9,010,662	34,795	13,061,607	0	0	31	31	16,250	42,039,211
1987	161,358	7,910,932	36,143	10,817,589	0	0	32	32	29,063	33,912,113
1988	116,746	8,090,085	57,124	10,119,503	0	0	55	55	50,088	20,153,778
1989	336,608	21,944,936	153,298	28,399,865	0	0	45	45	43,428	37,846,593
1990	371,848	21,010,981	122,639	27,238,839	0	0	63	63	93,829	38,804,250
1991	489,797	25,781,714	132,870	33,482,722	0	0	54	54	150,382	46,999,566
1992	450,767	24,422,625	118,363	30,958,188	0	0	42	42	82,920	38,576,048
1993	1,368,211	52,013,761	106,162	66,037,952	0	0	29	29	60,155	82,765,313
1994	904,379	32,789,455	57,928	42,051,525	0	0	11	11	36,323	100,344,879
1995	441,313	19,282,092	78,969	39,085,337	0	0	16	16	47,824	202,163,407
1996	1,225,705	19,085,704	13,897	24,900,246	0	0	0	0	7,102	209,821,088
1997	26,505,589	18,136,460	176,237	46,833,670	0	0	0	0	15,007	51,523,519
1998	11,902	1,261,749	11,840	1,584,702	0	0	0	0	11,063	4,752,340
1999	7,560	821,120	7,848	1,033,751	0	0	0	0	6,976	1,951,401
2000	158	17,312	169	26,677	0	0	0	0	174	190,534
2001	158	17,312	169	24,320	0	0	0	0	174	131,489
2002	158	17,312	169	24,320	0	0	0	0	174	40,688
2003	0	0	0	0	0	0	0	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	44,348,564	1,471,882,051	10,815,605	1,836,663,099	0	0	341,065	341,065	7,288,591	2,596,757,379

e) Costs from Table B-10 allocated to MWDSC are reduced herein by $16,425,510 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 Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	105,192	105,854	366,552	577,598	0	0	0
1964	0	0	0	123,718	171,212	532,023	826,953	6,064	20,521	26,585
1965	0	0	0	156,271	260,368	901,943	1,318,582	11,435	31,771	43,206
1966	18,096	0	18,096	172,750	291,282	1,076,118	1,540,150	20,198	49,707	69,905
1967	41,644	0	41,644	199,825	321,511	1,190,648	1,711,984	38,006	84,262	122,268
1968	121,705	0	121,705	236,230	362,521	1,313,169	1,911,920	51,764	111,464	163,228
1969	165,555	0	165,555	269,871	398,028	1,415,085	2,082,984	55,088	118,999	174,087
1970	169,349	0	169,349	282,190	412,989	1,454,105	2,149,284	56,731	123,183	179,914
1971	171,561	0	171,561	284,870	416,110	1,461,021	2,162,001	57,723	126,079	183,802
1972	172,926	0	172,926	332,088	417,040	1,465,310	2,214,438	58,298	128,562	186,860
1973	173,928	31,433	205,361	332,715	417,691	1,468,555	2,218,961	58,574	129,819	188,393
1974	176,811	33,008	209,819	333,250	418,310	1,470,564	2,222,124	58,765	130,871	189,636
1975	185,270	36,366	221,636	334,052	419,555	1,474,294	2,227,901	59,014	132,106	191,120
1976	189,954	40,918	230,872	334,905	420,361	1,476,406	2,231,672	165,886	331,018	496,904
1977	192,901	45,185	238,086	336,640	422,130	1,481,997	2,240,767	167,602	337,672	505,274
1978	196,174	49,273	245,447	338,998	424,431	1,488,800	2,252,229	173,127	351,175	524,302
1979	199,710	53,442	253,152	342,632	427,798	1,497,722	2,268,152	174,219	356,471	530,690
1980	209,467	67,873	277,340	344,951	429,989	1,503,367	2,278,307	175,389	362,882	538,271
1981	222,956	87,563	310,519	351,813	436,332	1,518,906	2,307,051	180,657	386,494	567,151
1982	234,566	107,105	341,671	350,092	434,809	1,515,558	2,300,459	179,870	379,596	559,466
1983	262,580	151,516	414,096	350,494	435,234	1,516,938	2,302,666	180,079	376,592	556,671
1984	326,593	224,617	551,210	357,555	441,942	1,534,244	2,333,741	181,722	382,218	563,940
1985	456,562	364,899	821,461	365,359	449,133	1,552,195	2,366,687	183,530	387,713	571,243
1986	820,939	693,593	1,514,532	366,368	450,115	1,554,924	2,371,407	184,419	391,738	576,157
1987	1,362,839	1,561,716	2,924,555	368,011	451,735	1,559,441	2,379,187	186,682	407,455	594,137
1988	1,774,438	2,211,596	3,986,034	370,597	454,245	1,566,608	2,391,450	193,232	476,682	669,914
1989	1,894,442	2,436,813	4,331,255	376,627	460,073	1,582,304	2,419,004	201,351	553,442	754,793
1990	1,958,388	2,520,384	4,478,772	382,293	465,450	1,595,914	2,443,657	209,299	616,661	825,960
1991	1,981,677	2,567,405	4,549,082	393,730	476,911	1,627,945	2,498,586	220,866	698,153	919,019
1992	1,986,979	2,572,560	4,559,539	415,636	497,228	1,678,108	2,590,972	236,675	813,849	1,050,524
1993	1,990,081	2,576,672	4,566,753	425,485	506,426	1,702,061	2,633,972	257,019	1,002,300	1,259,319
1994	1,996,670	2,586,382	4,583,052	432,487	513,212	1,720,608	2,666,307	328,490	1,675,532	2,004,022
1995	2,000,621	2,595,929	4,596,550	435,250	516,607	1,733,669	2,685,526	610,162	4,408,098	5,018,260
1996	2,003,117	2,600,987	4,604,104	440,964	522,274	1,748,817	2,712,055	1,421,487	12,418,565	13,840,052
1997	2,007,554	2,604,381	4,611,935	441,783	523,145	1,751,356	2,716,284	2,231,756	21,736,337	23,968,093
1998	2,027,728	2,622,966	4,650,694	443,862	525,149	1,756,594	2,725,605	2,243,879	21,863,848	24,107,727
1999	2,050,812	2,677,404	4,728,216	445,368	526,577	1,760,179	2,732,124	2,250,099	21,916,587	24,166,686
2000	2,050,981	2,677,807	4,728,788	446,372	527,494	1,762,368	2,736,234	2,253,299	21,939,865	24,193,164
2001	2,050,983	2,677,811	4,728,794	446,402	527,521	1,762,433	2,736,356	2,254,410	21,947,773	24,202,183
2002	2,050,985	2,677,816	4,728,801	446,432	527,549	1,762,499	2,736,480	2,255,104	21,953,006	24,208,110
2003	2,050,987	2,677,820	4,728,807	446,462	527,577	1,762,565	2,736,604	2,255,332	21,953,427	24,208,759
2004	2,050,987	2,677,820	4,728,807	446,462	527,577	1,762,565	2,736,604	2,255,332	21,953,427	24,208,759
2005	2,050,987	2,677,820	4,728,807	446,462	527,577	1,762,565	2,736,604	2,255,332	21,953,427	24,208,759
2006	2,050,987	2,677,820	4,728,807	446,462	527,577	1,762,565	2,736,604	2,255,332	21,953,427	24,208,759
2007	2,050,987	2,677,820	4,728,807	446,462	527,577	1,762,565	2,736,604	2,255,332	21,953,427	24,208,759
2008	2,050,987	2,677,820	4,728,807	446,462	527,577	1,762,565	2,736,604	2,255,332	21,953,427	24,208,759
2009	2,050,987	2,677,820	4,728,807	446,462	527,577	1,762,565	2,736,604	2,255,332	21,953,427	24,208,759
2010	2,050,987	2,677,820	4,728,807	446,462	527,577	1,762,565	2,736,604	2,255,332	21,953,427	24,208,759
2011	2,050,987	2,677,820	4,728,807	446,462	527,577	1,762,565	2,736,604	2,255,332	21,953,427	24,208,759
2012	2,050,987	2,677,820	4,728,807	446,462	527,577	1,762,565	2,736,604	2,255,332	21,953,427	24,208,759
2013	2,050,987	2,677,820	4,728,807	335,331	421,723	1,396,013	2,153,067	2,255,332	21,953,427	24,208,759
2014	2,050,987	2,677,820	4,728,807	300,000	356,364	1,230,542	1,886,906	2,249,269	21,932,906	24,182,175
2015	2,050,987	2,677,820	4,728,807	261,998	267,208	860,622	1,389,828	2,243,897	21,921,656	24,165,553
2016	2,032,891	2,677,820	4,710,711	242,900	236,295	686,447	1,165,642	2,235,134	21,903,720	24,138,854
2017	2,009,343	2,677,820	4,687,163	211,744	206,066	571,917	989,727	2,217,327	21,869,165	24,086,492
2018	1,929,282	2,677,820	4,607,102	170,127	165,056	449,396	784,579	2,203,568	21,841,963	24,045,531
2019	1,885,432	2,677,820	4,563,252	131,911	129,548	347,480	608,939	2,200,244	21,834,428	24,034,672
2020	1,881,638	2,677,820	4,559,458	118,000	114,588	308,460	541,048	2,198,602	21,830,244	24,028,846
2021	1,879,426	2,677,820	4,557,246	114,991	111,466	301,544	528,001	2,197,609	21,827,348	24,024,957
2022	1,878,060	2,677,820	4,555,880	114,374	110,536	297,255	522,165	2,197,034	21,824,865	24,021,899
2023	1,877,058	2,646,387	4,523,445	113,747	109,885	294,010	517,642	2,196,758	21,823,608	24,020,366
2024	1,874,176	2,644,812	4,518,988	113,212	109,266	292,001	514,479	2,196,567	21,822,556	24,019,123
2025	1,865,717	2,641,454	4,507,171	112,410	108,022	288,271	508,703	2,196,319	21,821,321	24,017,640
2026	1,861,033	2,636,902	4,497,935	111,557	107,215	286,159	504,931	2,089,447	21,622,409	23,711,856
2027	1,858,086	2,632,635	4,490,721	109,822	105,447	280,568	495,837	2,087,731	21,615,755	23,703,486
2028	1,854,813	2,628,547	4,483,360	107,464	103,146	273,765	484,375	2,082,205	21,602,252	23,684,457
2029	1,851,277	2,624,378	4,475,655	103,830	99,778	264,843	468,451	2,081,113	21,596,956	23,678,069
2030	1,841,520	2,609,947	4,451,467	101,511	97,588	259,198	458,297	2,079,943	21,590,545	23,670,488
2031	1,828,031	2,590,257	4,418,288	94,649	91,245	243,659	429,553	2,074,676	21,566,933	23,641,609
2032	1,816,420	2,570,715	4,387,135	96,370	92,768	247,007	436,145	2,075,462	21,573,831	23,649,293
2033	1,788,407	2,526,304	4,314,711	95,968	92,343	245,627	433,938	2,075,253	21,576,835	23,652,088
2034	1,724,394	2,453,203	4,177,597	88,908	85,634	228,321	402,863	2,073,611	21,571,209	23,644,820
2035	1,594,424	2,312,921	3,907,345	81,103	78,443	210,370	369,916	2,071,803	21,565,714	23,637,517
TOTAL	99,691,801	129,230,282	228,922,083	21,510,675	25,881,741	86,790,473	134,182,889	91,964,194	879,282,982	971,247,176

a) Unadjusted for prior overpayments or underpayments of charges.
b) Determined at the current Project Interest Rate of 4.620 percent per annum.

TABLE B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area									
				Kern County Water Agency						
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Municipal and Industrial (c (15)	Agri-cultural (16)	County of Kings (17)	Oak Flat Water District (18)	Tulare Lake Basin Water Storage District (19)	Total (20)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	2,729	0	0	0	0	0	0	2,729
1965	0	0	6,039	64,393	9,300	0	0	0	0	79,732
1966	0	0	12,058	120,454	17,101	0	0	0	0	149,613
1967	0	0	26,299	233,638	34,405	0	0	0	0	294,342
1968	74,961	2,412	49,027	336,310	49,045	415,685	8,518	4,698	64,047	1,004,703
1969	75,092	7,237	57,509	392,633	52,620	853,670	9,026	5,106	242,332	1,695,225
1970	82,299	7,237	59,318	424,082	54,008	1,038,320	9,276	5,311	179,331	1,859,182
1971	93,832	7,237	60,424	445,234	54,800	1,379,074	9,418	5,719	190,833	2,246,571
1972	104,840	7,237	61,041	454,954	55,163	2,065,043	9,486	10,960	588,708	3,357,432
1973	115,324	7,237	61,467	459,182	55,337	2,381,712	9,516	6,332	227,704	3,323,811
1974	175,030	7,237	61,988	461,221	55,438	2,667,161	9,534	7,090	377,950	3,822,649
1975	212,589	7,237	62,551	463,538	55,579	3,194,527	9,558	7,304	450,984	4,463,867
1976	162,088	7,237	62,819	465,399	55,768	3,443,671	9,593	8,250	322,624	4,537,449
1977	159,357	7,237	63,462	468,106	56,055	3,773,275	9,637	7,557	308,471	4,853,157
1978	170,365	7,237	65,900	469,967	56,246	4,194,311	9,660	7,966	330,952	5,312,604
1979	202,047	7,237	66,215	472,733	56,582	4,605,536	9,721	8,170	372,470	5,800,711
1980	214,922	7,237	66,504	475,481	56,919	5,025,681	9,789	11,642	374,870	6,243,045
1981	214,922	7,237	68,094	491,901	58,864	5,500,239	10,181	8,783	397,352	6,757,573
1982	214,922	7,237	68,104	489,625	58,801	5,938,224	10,166	9,191	419,311	7,215,581
1983	224,882	7,237	68,441	493,873	59,472	6,436,868	10,300	9,396	49,920	7,360,389
1984	236,414	7,237	69,059	499,508	60,180	6,886,449	10,442	9,804	327,350	8,106,443
1985	247,422	7,237	69,789	507,432	61,341	7,324,435	10,675	10,008	238,145	8,476,484
1986	258,430	7,237	70,077	509,832	61,686	7,758,852	10,743	10,417	508,192	9,195,466
1987	269,439	7,237	70,583	513,510	62,216	8,201,297	10,846	10,621	530,151	9,675,900
1988	280,447	7,237	70,944	516,374	62,627	8,614,306	10,924	11,030	552,110	10,125,999
1989	291,455	7,237	71,830	520,036	63,252	8,912,243	11,074	11,438	574,592	10,463,157
1990	302,463	7,237	73,271	538,432	65,495	9,221,776	11,503	11,642	619,555	10,851,374
1991	302,463	7,237	75,883	567,255	70,047	9,221,776	12,311	11,642	619,555	10,888,169
1992	302,463	7,237	79,085	598,008	74,907	9,221,776	13,291	11,642	619,555	10,927,964
1993	302,463	7,237	80,604	611,020	76,768	9,221,776	13,645	11,642	619,555	10,944,710
1994	302,463	7,237	82,239	620,459	78,056	9,221,776	13,887	11,642	619,555	10,957,314
1995	302,463	7,237	83,456	629,554	79,393	9,221,776	14,149	11,642	619,555	10,969,225
1996	302,463	7,237	85,117	639,689	80,872	9,221,776	14,415	11,642	619,555	10,982,766
1997	302,463	7,237	85,487	641,392	81,138	9,221,776	14,467	11,642	619,555	10,985,157
1998	302,463	7,237	86,309	646,811	82,008	9,221,776	14,642	11,642	619,555	10,992,443
1999	302,463	7,237	86,982	650,687	82,632	9,221,776	14,768	11,642	619,555	10,997,742
2000	302,463	7,237	87,526	653,354	83,063	9,221,776	14,856	11,642	619,555	11,001,472
2001	302,463	7,237	87,726	653,376	83,067	9,221,776	14,856	11,642	619,555	11,001,698
2002	302,463	7,237	87,833	653,399	83,070	9,221,776	14,857	11,642	619,555	11,001,832
2003	302,463	7,237	87,942	653,422	83,073	9,221,776	14,858	11,642	619,555	11,001,968
2004	302,463	7,237	87,942	653,422	83,073	9,221,776	14,858	11,642	619,555	11,001,968
2005	302,463	7,237	87,942	653,422	83,073	9,221,776	14,858	11,642	619,555	11,001,968
2006	302,463	7,237	87,942	653,422	83,073	9,221,776	14,858	11,642	619,555	11,001,968
2007	302,463	7,237	87,942	653,422	83,073	9,221,776	14,858	11,642	619,555	11,001,968
2008	302,463	7,237	87,942	653,422	83,073	9,221,776	14,858	11,642	619,555	11,001,968
2009	302,463	7,237	87,942	653,422	83,073	9,221,776	14,858	11,642	619,555	11,001,968
2010	302,463	7,237	87,942	653,422	83,073	9,221,776	14,858	11,642	619,555	11,001,968
2011	302,463	7,237	87,942	653,422	83,073	9,221,776	14,858	11,642	619,555	11,001,968
2012	302,463	7,237	87,942	653,422	83,073	9,221,776	14,858	11,642	619,555	11,001,968
2013	302,463	7,237	87,942	653,422	83,073	9,221,776	14,858	11,642	619,555	11,001,968
2014	302,463	7,237	85,213	653,422	83,073	9,221,776	14,858	11,642	619,555	10,999,239
2015	302,463	7,237	81,903	589,029	73,773	9,221,776	14,858	11,642	619,555	10,922,236
2016	302,463	7,237	75,884	532,968	65,972	9,221,776	14,858	11,642	619,555	10,852,355
2017	302,463	7,237	61,643	419,783	48,668	9,221,776	14,858	11,642	619,555	10,707,625
2018	302,463	7,237	38,915	317,112	34,029	9,221,776	6,340	11,642	619,555	10,559,069
2019	302,463	7,237	30,433	260,789	30,453	9,221,776	5,831	11,642	619,555	10,490,179
2020	302,463	7,237	28,624	229,340	29,065	9,221,776	5,581	11,642	619,555	10,455,283
2021	302,463	7,237	27,518	208,188	28,273	9,221,776	5,439	11,642	619,555	10,432,091
2022	302,463	7,237	26,901	198,467	27,911	9,221,776	5,372	11,642	619,555	10,421,324
2023	302,463	7,237	26,475	194,239	27,737	9,221,776	5,341	11,642	619,555	10,416,465
2024	302,463	7,237	25,954	192,200	27,636	9,221,776	5,324	11,642	619,555	10,413,787
2025	302,463	7,237	25,391	189,883	27,495	9,221,776	5,300	11,642	619,555	10,410,742
2026	302,463	7,237	25,123	188,023	27,305	9,221,776	5,264	11,642	619,555	10,408,388
2027	302,463	7,237	24,480	185,315	27,019	9,221,776	5,221	11,642	619,555	10,404,708
2028	302,463	7,237	22,042	183,454	26,827	9,221,776	5,198	11,642	619,555	10,400,194
2029	302,463	7,237	21,727	180,689	26,492	9,221,776	5,136	11,642	619,555	10,396,717
2030	302,463	7,237	21,438	177,941	26,155	9,221,776	5,069	11,642	619,555	10,393,276
2031	302,463	7,237	19,848	161,521	24,210	9,221,776	4,677	11,642	619,555	10,372,929
2032	302,463	7,237	19,838	163,797	24,272	9,221,776	4,692	11,642	619,555	10,375,272
2033	302,463	7,237	19,501	159,549	23,602	9,221,776	4,558	11,642	619,555	10,369,883
2034	302,463	7,237	18,883	153,913	22,894	9,221,776	4,416	11,642	619,555	10,362,779
2035	302,463	7,237	18,153	145,990	21,732	9,221,776	4,183	11,642	619,555	10,352,731
TOTAL	17,994,377	487,291	4,267,038	31,726,106	4,011,717	524,812,275	715,542	722,325	36,127,929	620,864,600

c) Charges under Amendment No. 18 of the water supply contract with Kern County Water Agency.

TABLE B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (21)	Castaic Lake Water Agency (22)	Coachella Valley Water District (23)	Crestline-Lake Arrowhead Water Agency (24)	Desert Water Agency (25)	Littlerock Creek Irrigation District (26)	Mojave Water Agency (27)	Palmdale Water District (28)	San Bernardino Valley Municipal Water District (29)	San Gabriel Valley Municipal Water District (30)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,380	0	0	0	0	0	0	0	51,822	0
1964	62,973	27,495	14,452	4,378	37,225	1,145	28,487	8,220	82,953	35,048
1965	118,798	53,095	25,137	7,206	40,837	2,086	50,402	15,247	135,293	35,403
1966	216,130	101,429	44,803	12,499	73,271	3,760	90,547	27,724	232,882	61,564
1967	418,148	211,152	86,258	23,510	141,637	7,296	175,459	54,110	434,047	115,759
1968	672,006	420,323	141,218	38,613	232,278	11,801	286,776	87,433	731,016	194,838
1969	974,218	624,313	210,120	57,393	345,912	17,277	426,444	127,422	1,138,226	303,131
1970	1,271,239	781,397	296,342	84,931	488,112	23,465	592,562	171,570	1,694,152	444,413
1971	1,527,974	948,599	400,954	120,401	660,643	28,891	790,094	209,154	2,397,887	620,763
1972	1,659,455	1,058,117	455,613	137,672	750,788	31,357	896,565	226,857	2,812,965	722,127
1973	1,709,111	1,072,566	472,537	142,369	778,698	32,333	930,668	233,711	2,950,242	757,731
1974	1,727,190	1,119,205	480,626	146,564	792,040	32,655	942,814	236,063	3,040,050	778,318
1975	1,750,218	1,133,532	493,847	150,344	813,844	33,070	969,261	239,080	3,122,555	800,045
1976	1,763,146	1,146,106	503,724	153,039	830,134	33,323	989,262	240,814	3,200,788	820,853
1977	1,775,263	1,159,126	510,700	154,938	841,638	33,539	1,003,433	242,395	3,249,874	833,907
1978	1,785,443	1,178,075	515,361	156,257	849,326	33,731	1,012,799	243,764	3,280,045	841,841
1979	1,800,853	1,202,059	519,369	157,391	855,936	33,998	1,020,850	245,736	3,301,928	847,542
1980	1,819,144	1,249,958	523,551	158,505	862,832	34,303	1,029,382	248,007	3,322,550	853,082
1981	1,914,484	1,340,619	545,181	164,283	898,505	35,958	1,073,489	260,305	3,426,745	881,066
1982	1,906,459	1,371,784	542,795	163,843	894,571	35,828	1,068,284	259,315	3,419,626	878,904
1983	1,986,509	1,415,752	558,156	167,932	919,903	37,176	1,099,800	269,420	3,493,269	899,022
1984	2,092,591	1,442,347	578,544	173,943	953,526	38,961	1,141,137	282,789	3,603,699	929,232
1985	2,170,395	1,457,462	593,864	178,350	978,793	40,358	1,172,322	292,451	3,683,751	951,148
1986	2,216,448	1,465,563	605,236	181,618	997,547	41,040	1,195,443	297,996	3,742,376	967,172
1987	2,262,577	1,470,943	617,752	184,898	1,018,189	41,588	1,221,184	303,324	3,802,341	983,546
1988	2,280,466	1,476,392	627,957	187,587	1,035,019	41,897	1,242,125	305,570	3,852,003	997,065
1989	2,294,657	1,485,430	632,981	189,189	1,043,305	42,115	1,252,093	307,160	3,888,596	1,006,840
1990	2,350,226	1,508,129	651,415	194,681	1,073,706	43,045	1,289,210	313,963	3,994,139	1,035,334
1991	2,384,240	1,527,382	670,660	200,333	1,105,444	43,436	1,328,133	317,485	4,111,119	1,066,993
1992	2,428,752	1,548,710	692,096	207,379	1,140,797	44,084	1,370,960	322,473	4,265,681	1,108,980
1993	2,463,159	1,567,973	707,676	215,024	1,166,491	44,605	1,399,735	326,652	4,408,730	1,148,030
1994	2,497,543	1,585,899	720,253	225,189	1,187,233	45,158	1,419,288	330,665	4,845,411	1,265,878
1995	2,525,439	1,595,572	728,085	230,663	1,200,149	45,595	1,432,265	333,873	5,136,322	1,344,261
1996	2,552,314	1,609,153	735,510	234,569	1,212,395	46,031	1,445,705	337,060	6,072,632	1,380,731
1997	2,554,583	1,611,637	737,026	235,890	1,214,896	46,071	1,447,985	337,355	6,261,574	1,431,410
1998	2,560,789	1,638,959	738,435	236,630	1,217,219	46,176	1,450,561	338,143	6,317,339	1,446,406
1999	2,565,214	1,641,407	739,286	236,850	1,218,624	46,251	1,452,326	338,703	6,321,331	1,447,497
2000	2,568,201	1,643,174	739,843	236,993	1,219,542	46,301	1,453,483	339,080	6,323,890	1,448,198
2001	2,568,268	1,643,489	739,855	236,996	1,219,562	46,302	1,453,508	339,088	6,323,944	1,448,213
2002	2,568,335	1,643,671	739,867	236,999	1,219,582	46,304	1,453,534	339,096	6,323,998	1,448,228
2003	2,568,403	1,643,856	739,880	237,002	1,219,602	46,305	1,453,559	339,105	6,324,054	1,448,243
2004	2,568,403	1,643,856	739,880	237,002	1,219,602	46,305	1,453,559	339,105	6,324,054	1,448,243
2005	2,568,403	1,643,856	739,880	237,002	1,219,602	46,305	1,453,559	339,105	6,324,054	1,448,243
2006	2,568,403	1,643,856	739,880	237,002	1,219,602	46,305	1,453,559	339,105	6,324,054	1,448,243
2007	2,568,403	1,643,856	739,880	237,002	1,219,602	46,305	1,453,559	339,105	6,324,054	1,448,243
2008	2,568,403	1,643,856	739,880	237,002	1,219,602	46,305	1,453,559	339,105	6,324,054	1,448,243
2009	2,568,403	1,643,856	739,880	237,002	1,219,602	46,305	1,453,559	339,105	6,324,054	1,448,243
2010	2,568,403	1,643,856	739,880	237,002	1,219,602	46,305	1,453,559	339,105	6,324,054	1,448,243
2011	2,568,403	1,643,856	739,880	237,002	1,219,602	46,305	1,453,559	339,105	6,324,054	1,448,243
2012	2,568,403	1,643,856	739,880	237,002	1,219,602	46,305	1,453,559	339,105	6,324,054	1,448,243
2013	2,535,023	1,643,856	739,880	237,002	1,206,212	46,305	1,453,559	339,105	6,272,232	1,435,119
2014	2,505,430	1,616,361	725,428	232,624	1,196,387	45,159	1,425,072	330,885	6,241,101	1,426,925
2015	2,449,606	1,590,761	714,743	229,796	1,178,765	44,219	1,403,157	323,858	6,188,760	1,412,840
2016	2,352,273	1,542,427	695,077	224,503	1,146,331	42,545	1,363,012	311,381	6,091,172	1,386,679
2017	2,150,255	1,432,704	653,622	213,492	1,077,965	39,008	1,278,101	284,995	5,890,006	1,332,484
2018	1,896,398	1,223,532	598,662	198,389	987,324	34,504	1,166,783	251,672	5,593,038	1,253,405
2019	1,594,185	1,019,543	529,760	179,609	873,690	29,028	1,027,115	211,683	5,185,827	1,145,112
2020	1,297,164	862,459	443,538	152,071	731,491	22,840	860,998	167,535	4,629,902	1,003,830
2021	1,040,429	695,257	338,926	116,601	558,959	17,413	663,465	129,951	3,926,166	827,480
2022	908,948	585,739	284,266	99,329	468,814	14,948	556,994	112,248	3,511,089	726,116
2023	859,292	571,290	267,343	94,632	440,904	13,972	522,891	105,394	3,373,812	690,512
2024	841,214	524,650	259,254	90,438	427,562	13,650	510,745	103,042	3,284,004	669,925
2025	818,185	510,323	246,033	86,658	405,758	13,235	484,299	100,025	3,201,499	648,198
2026	805,257	497,749	236,156	83,963	389,468	12,982	464,297	98,291	3,123,266	627,390
2027	793,140	484,729	229,180	82,064	377,964	12,765	450,126	96,710	3,074,179	614,337
2028	782,961	465,781	224,519	80,745	370,276	12,574	440,760	95,341	3,044,009	606,403
2029	767,550	441,796	220,510	79,611	363,666	12,307	432,710	93,369	3,022,126	600,701
2030	749,259	393,898	216,329	78,497	356,770	12,002	424,177	91,098	3,001,503	595,161
2031	653,919	303,237	194,698	72,719	321,097	10,346	380,070	78,800	2,897,309	567,177
2032	661,944	272,072	197,084	73,159	325,032	10,476	385,275	79,790	2,904,428	569,339
2033	581,894	228,104	181,724	69,070	299,700	9,128	353,759	69,685	2,830,785	549,222
2034	475,812	201,509	161,336	63,058	266,076	7,344	312,423	56,316	2,720,355	519,011
2035	398,009	186,394	146,015	58,652	240,809	5,947	281,237	46,653	2,640,303	497,095
TOTAL	126,398,515	80,910,725	36,239,968	11,492,551	59,737,189	2,284,057	71,274,990	16,718,150	294,685,202	68,767,410

TABLE B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (39)	Grand Total (40)
	San Gorgonio Pass Water Agency (31)	Metropolitan Water District of Southern California (32)	Ventura County Flood Control District (33)	Total (34)	City of Yuba City (35)	County of Butte (36)	Plumas County FC&WCD (37)	Total (38)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	692,054	0	777,256	0	0	0	0	43,197	1,398,051
1964	21,774	1,262,657	9,394	1,596,201	0	0	0	0	70,156	2,522,624
1965	21,903	2,184,191	17,795	2,707,393	0	0	405	405	100,254	4,249,572
1966	38,026	3,906,499	33,480	4,842,614	0	0	565	565	117,224	6,738,167
1967	71,397	7,706,041	68,264	9,513,078	0	0	563	563	157,203	11,841,082
1968	120,287	14,368,023	133,511	17,438,123	0	0	565	565	232,669	20,872,913
1969	187,358	21,892,236	202,921	26,506,971	0	0	3,196	3,196	296,646	30,924,664
1970	275,448	29,038,681	258,269	35,420,581	0	0	15,144	15,144	316,958	40,110,412
1971	385,637	37,301,569	316,809	45,709,375	0	0	15,972	15,972	320,734	50,810,016
1972	448,767	44,132,087	354,497	53,686,867	0	0	17,360	17,360	321,370	59,957,253
1973	470,931	46,373,082	357,909	56,281,888	0	0	17,360	17,360	322,042	62,557,816
1974	484,027	48,399,384	372,703	58,551,639	0	0	17,362	17,362	322,455	65,335,684
1975	497,511	49,363,315	377,108	59,743,730	0	0	17,364	17,364	323,913	67,189,531
1976	510,460	50,216,876	381,392	60,789,917	0	0	17,365	17,365	324,332	68,628,511
1977	518,563	50,907,840	385,709	61,616,925	0	0	17,368	17,368	325,173	69,796,750
1978	523,486	51,508,205	391,362	62,319,695	0	0	17,369	17,369	326,253	70,997,899
1979	527,014	52,313,242	400,283	63,226,201	0	0	17,371	17,371	327,726	72,424,003
1980	530,430	53,722,735	417,798	64,772,277	0	0	17,372	17,372	329,087	74,455,699
1981	547,678	56,758,062	450,526	68,296,901	0	0	17,374	17,374	332,105	78,588,674
1982	546,370	57,558,344	461,968	69,108,091	0	0	17,375	17,375	331,761	79,874,404
1983	558,743	59,139,328	478,093	71,023,103	0	0	17,376	17,376	332,581	82,006,882
1984	577,326	60,428,002	487,638	72,729,735	0	0	17,377	17,377	336,266	84,638,712
1985	590,801	61,267,287	492,911	73,869,893	0	0	17,378	17,378	340,512	86,463,658
1986	600,654	61,798,632	495,775	74,605,500	0	0	17,380	17,380	341,346	88,621,788
1987	610,726	62,260,765	497,560	75,275,393	0	0	17,381	17,381	342,179	91,208,732
1988	619,049	62,668,812	499,424	75,833,366	0	0	17,383	17,383	343,678	93,367,824
1989	625,107	63,088,604	502,388	76,358,465	0	0	17,386	17,386	346,277	94,690,337
1990	642,684	64,234,521	510,393	77,841,446	0	0	17,388	17,388	348,545	96,807,142
1991	662,230	65,338,974	516,840	79,273,269	0	0	17,391	17,391	353,477	98,498,993
1992	688,157	66,703,709	523,873	81,045,651	0	0	17,394	17,394	361,438	100,553,482
1993	712,194	68,006,060	530,185	82,696,514	0	0	17,396	17,396	365,859	102,484,523
1994	785,724	70,801,344	535,890	86,245,475	0	0	17,398	17,398	369,092	106,842,660
1995	834,726	72,577,978	539,029	88,523,957	0	0	17,399	17,399	371,060	112,181,977
1996	858,845	73,631,807	543,345	90,660,097	0	0	17,399	17,399	373,674	123,190,147
1997	926,447	74,684,457	544,111	92,033,442	0	0	17,399	17,399	374,066	134,706,376
1998	2,402,479	75,694,432	553,925	94,641,493	0	0	17,399	17,399	374,901	137,510,262
1999	2,403,149	75,765,415	554,592	94,730,645	0	0	17,399	17,399	375,524	137,748,336
2000	2,403,579	75,812,108	555,038	94,789,430	0	0	17,399	17,399	375,920	137,842,407
2001	2,403,588	75,813,104	555,048	94,790,965	0	0	17,399	17,399	375,930	137,853,325
2002	2,403,597	75,814,112	555,057	94,792,380	0	0	17,399	17,399	375,941	137,860,943
2003	2,403,606	75,815,132	555,067	94,793,814	0	0	17,399	17,399	375,951	137,863,302
2004	2,403,606	75,815,132	555,067	94,793,814	0	0	17,399	17,399	375,951	137,863,302
2005	2,403,606	75,815,132	555,067	94,793,814	0	0	17,399	17,399	375,951	137,863,302
2006	2,403,606	75,815,132	555,067	94,793,814	0	0	17,399	17,399	375,951	137,863,302
2007	2,403,606	75,815,132	555,067	94,793,814	0	0	17,399	17,399	375,951	137,863,302
2008	2,403,606	75,815,132	555,067	94,793,814	0	0	17,399	17,399	375,951	137,863,302
2009	2,403,606	75,815,132	555,067	94,793,814	0	0	17,399	17,399	375,951	137,863,302
2010	2,403,606	75,815,132	555,067	94,793,814	0	0	17,399	17,399	375,951	137,863,302
2011	2,403,606	75,815,132	555,067	94,793,814	0	0	17,399	17,399	375,951	137,863,302
2012	2,403,606	75,815,132	555,067	94,793,814	0	0	17,399	17,399	375,951	137,863,302
2013	2,395,439	75,123,078	555,067	93,981,877	0	0	17,399	17,399	332,754	136,424,631
2014	2,390,376	74,552,475	545,674	93,233,897	0	0	17,399	17,399	305,795	135,354,218
2015	2,381,703	73,630,941	537,272	92,086,421	0	0	16,994	16,994	275,697	133,585,536
2016	2,365,580	71,908,633	521,587	89,951,200	0	0	16,834	16,834	258,727	131,094,323
2017	2,332,209	68,109,092	486,803	85,280,736	0	0	16,837	16,837	218,748	125,987,328
2018	2,283,320	61,447,109	421,556	77,355,692	0	0	16,834	16,834	143,282	117,512,089
2019	2,216,248	53,922,896	352,147	68,286,843	0	0	14,203	14,203	79,304	108,077,392
2020	2,128,158	46,776,452	296,798	59,373,236	0	0	2,255	2,255	58,993	99,019,119
2021	2,017,969	38,513,563	238,258	49,084,437	0	0	1,427	1,427	55,217	88,683,376
2022	1,954,839	31,683,046	200,570	41,106,946	0	0	40	40	54,581	80,682,835
2023	1,932,675	29,442,050	197,158	38,511,925	0	0	39	39	53,909	78,043,791
2024	1,919,579	27,415,748	182,364	36,242,175	0	0	38	38	53,496	75,762,086
2025	1,906,095	26,451,817	177,959	35,050,084	0	0	35	35	52,038	74,546,413
2026	1,893,146	25,598,257	173,675	34,003,897	0	0	34	34	51,619	73,178,660
2027	1,885,043	24,907,292	169,359	33,176,888	0	0	32	32	50,778	72,322,450
2028	1,880,120	24,306,927	163,705	32,474,121	0	0	30	30	49,697	71,576,234
2029	1,876,592	23,501,890	154,784	31,567,612	0	0	28	28	48,224	70,634,756
2030	1,873,176	22,092,397	137,269	30,021,536	0	0	27	27	46,864	69,041,955
2031	1,855,929	19,057,070	104,542	26,496,913	0	0	26	26	43,846	65,403,164
2032	1,857,236	18,256,789	93,099	25,685,723	0	0	24	24	44,190	64,577,782
2033	1,844,863	16,675,805	76,974	23,770,713	0	0	24	24	43,370	62,584,727
2034	1,826,280	15,387,130	67,429	22,064,079	0	0	23	23	39,685	60,691,846
2035	1,812,805	14,547,846	62,157	20,923,922	0	0	21	21	35,438	59,226,890
TOTAL	99,902,312	3,686,594,197	27,329,689	4,582,334,955	0	0	869,863	869,863	18,575,286	6,556,996,852

TABLE B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	9,699	8,868	0	18,567	0	0	0
1963	0	0	0	38,048	34,788	82,896	155,732	0	0	0
1964	0	0	0	41,148	38,323	91,320	170,791	0	0	0
1965	0	0	0	78,529	75,616	195,792	349,937	0	0	0
1966	0	0	0	79,753	78,779	218,544	377,076	0	0	0
1967	0	0	0	127,896	123,665	335,225	586,786	0	0	0
1968	130	0	130	126,058	120,563	333,506	580,127	11,801	21,769	33,570
1969	80,875	0	80,875	145,410	138,051	372,584	656,045	63,112	116,434	179,546
1970	94,872	0	94,872	128,993	120,246	320,663	569,902	74,187	136,867	211,054
1971	45,579	0	45,579	113,071	108,346	296,004	517,421	74,011	136,541	210,552
1972	37,895	0	37,895	122,407	117,483	334,366	574,256	79,195	146,107	225,302
1973	32,993	0	32,993	122,738	116,785	325,727	565,250	75,714	139,685	215,399
1974	46,498	0	46,498	154,434	146,929	403,081	704,444	76,531	141,190	217,721
1975	37,707	0	37,707	189,176	182,087	513,823	885,086	92,605	170,845	263,450
1976	60,786	0	60,786	203,063	193,436	524,814	921,313	94,933	175,142	270,075
1977	78,400	0	78,400	179,870	169,065	500,102	849,037	102,946	189,923	292,869
1978	56,318	0	56,318	239,301	228,854	647,829	1,115,984	104,061	191,982	296,043
1979	73,852	0	73,852	236,986	232,103	666,744	1,135,833	100,749	185,873	286,622
1980	81,770	0	81,770	389,583	372,191	1,010,846	1,772,620	125,147	230,882	356,029
1981	100,779	0	100,779	316,970	301,871	833,301	1,452,142	138,608	255,713	394,321
1982	191,985	0	191,985	389,700	372,287	1,105,750	1,867,737	140,853	259,854	400,707
1983	80,218	0	80,218	438,508	428,951	1,269,311	2,136,770	169,784	313,234	483,018
1984	106,446	0	106,446	591,134	565,621	1,817,394	2,974,149	200,551	369,994	570,545
1985	215,389	0	215,389	679,106	659,266	1,849,208	3,187,580	246,202	454,211	700,413
1986	203,620	0	203,620	614,494	584,195	1,786,721	2,985,410	233,401	430,597	663,998
1987	293,960	0	293,960	683,170	648,394	1,991,085	3,322,649	230,168	463,216	693,384
1988	312,155	(186)	311,969	677,647	656,010	1,911,899	3,245,556	257,441	558,467	815,908
1989	399,470	680,418	1,079,888	715,408	711,073	1,894,086	3,320,567	242,490	664,224	906,714
1990	652,834	666,332	1,319,166	776,579	774,806	2,116,644	3,668,029	306,040	669,310	975,350
1991	722,143	854,742	1,576,885	538,766	520,675	1,510,754	2,570,195	301,080	671,479	972,559
1992	482,239	709,688	1,191,927	939,077	1,004,388	2,613,645	4,557,110	346,130	736,312	1,082,442
1993	492,846	661,096	1,153,942	1,299,203	1,282,548	3,389,953	5,971,704	385,626	733,337	1,118,963
1994	537,751	630,636	1,168,387	1,376,971	1,319,886	3,570,465	6,267,322	490,077	904,998	1,395,075
1995	538,264	654,245	1,192,509	1,192,473	1,148,250	3,128,633	5,469,356	467,063	861,297	1,328,360
1996	717,248	1,230,128	1,947,376	1,243,734	1,232,159	3,294,950	5,770,843	527,230	972,268	1,499,498
1997	734,926	1,230,642	1,965,568	1,255,085	1,213,719	3,278,517	5,747,321	777,846	1,434,618	2,212,464
1998	699,406	1,209,523	1,908,929	1,200,349	1,167,096	3,197,499	5,564,944	785,244	1,448,685	2,233,929
1999	708,908	1,218,983	1,927,891	1,229,245	1,195,459	3,277,353	5,702,057	791,364	1,459,976	2,251,340
2000	710,138	1,221,780	1,931,918	1,230,365	1,196,495	3,279,909	5,706,769	792,930	1,462,860	2,255,790
2001	711,186	1,224,119	1,935,305	1,231,181	1,197,254	3,281,766	5,710,201	793,769	1,464,408	2,258,177
2002	711,372	1,224,544	1,935,916	1,231,345	1,197,407	3,282,141	5,710,893	793,993	1,464,826	2,258,819
2003	711,464	1,224,752	1,936,216	1,231,426	1,197,481	3,282,324	5,711,231	794,105	1,465,031	2,259,136
2004	711,580	1,225,017	1,936,597	1,231,527	1,197,575	3,282,555	5,711,657	794,245	1,465,289	2,259,534
2005	711,020	1,223,752	1,934,772	1,231,039	1,197,122	3,281,439	5,709,600	793,564	1,464,035	2,257,599
2006	711,070	1,223,870	1,934,940	1,231,084	1,197,163	3,281,541	5,709,788	793,628	1,464,149	2,257,777
2007	711,147	1,224,044	1,935,191	1,231,150	1,197,225	3,281,696	5,710,071	793,720	1,464,320	2,258,040
2008	711,215	1,224,204	1,935,419	1,231,213	1,197,281	3,281,835	5,710,329	793,807	1,464,478	2,258,285
2009	711,287	1,224,368	1,935,655	1,231,275	1,197,340	3,281,978	5,710,593	793,892	1,464,637	2,258,529
2010	711,367	1,224,554	1,935,921	1,231,344	1,197,404	3,282,137	5,710,885	793,988	1,464,813	2,258,801
2011	711,420	1,224,685	1,936,105	1,231,384	1,197,437	3,282,222	5,711,043	794,057	1,464,940	2,258,997
2012	711,489	1,224,845	1,936,334	1,231,445	1,197,494	3,282,364	5,711,303	794,141	1,465,096	2,259,237
2013	711,688	1,225,297	1,936,985	1,231,619	1,197,656	3,282,757	5,712,032	794,380	1,465,539	2,259,919
2014	711,781	1,225,512	1,937,293	1,231,692	1,197,723	3,282,924	5,712,339	794,474	1,465,712	2,260,186
2015	711,843	1,225,655	1,937,498	1,231,756	1,197,782	3,283,069	5,712,607	794,569	1,465,888	2,260,457
2016	711,821	1,225,609	1,937,430	1,231,738	1,197,767	3,283,033	5,712,538	794,545	1,465,844	2,260,389
2017	711,832	1,225,635	1,937,467	1,231,749	1,197,778	3,283,057	5,712,584	794,561	1,465,871	2,260,432
2018	711,849	1,225,676	1,937,525	1,231,765	1,197,792	3,283,092	5,712,649	794,581	1,465,910	2,260,491
2019	711,849	1,225,675	1,937,524	1,231,766	1,197,792	3,283,093	5,712,651	794,583	1,465,912	2,260,495
2020	711,852	1,225,684	1,937,536	1,231,768	1,197,794	3,283,099	5,712,661	794,588	1,465,919	2,260,507
2021	711,687	1,225,312	1,936,999	1,231,627	1,197,663	3,282,772	5,712,062	794,390	1,465,554	2,259,944
2022	711,685	1,225,307	1,936,992	1,231,625	1,197,661	3,282,770	5,712,056	794,387	1,465,550	2,259,937
2023	711,681	1,225,298	1,936,979	1,231,622	1,197,657	3,282,761	5,712,040	794,382	1,465,541	2,259,923
2024	711,683	1,225,302	1,936,985	1,231,622	1,197,659	3,282,765	5,712,046	794,386	1,465,545	2,259,931
2025	711,672	1,225,279	1,936,951	1,231,614	1,197,651	3,282,746	5,712,011	794,374	1,465,524	2,259,898
2026	711,661	1,225,255	1,936,916	1,231,605	1,197,642	3,282,725	5,711,972	794,362	1,465,497	2,259,859
2027	711,657	1,225,245	1,936,902	1,231,599	1,197,639	3,282,715	5,711,953	794,353	1,465,488	2,259,841
2028	711,574	1,225,055	1,936,629	1,231,527	1,197,572	3,282,549	5,711,648	794,253	1,465,305	2,259,558
2029	711,574	1,225,054	1,936,628	1,231,527	1,197,572	3,282,549	5,711,648	794,253	1,465,305	2,259,558
2030	711,581	1,225,071	1,936,652	1,231,534	1,197,577	3,282,565	5,711,676	794,264	1,465,323	2,259,587
2031	711,566	1,225,038	1,936,604	1,231,521	1,197,563	3,282,533	5,711,617	794,241	1,465,284	2,259,525
2032	711,568	1,225,039	1,936,607	1,231,522	1,197,565	3,282,537	5,711,624	794,245	1,465,287	2,259,532
2033	711,570	1,225,045	1,936,615	1,231,524	1,197,567	3,282,540	5,711,631	794,246	1,465,292	2,259,538
2034	711,566	1,225,035	1,936,601	1,231,520	1,197,563	3,282,530	5,711,613	794,241	1,465,283	2,259,524
2035	711,587	1,225,084	1,936,671	1,231,538	1,197,581	3,282,577	5,711,696	794,270	1,465,333	2,259,603
TOTAL	34,532,844	53,842,943	88,375,787	63,216,940	61,503,726	169,178,699	293,899,365	36,702,957	68,391,618	105,094,575

TABLE B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	37,806	1,963	5,639	60,702	678,085	2,007	2,073	77,592	865,867
1969	45,479	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	70,688	3,504	49,725	174,899	2,427,160	3,583	3,644	141,673	2,874,876
1979	68,878	3,437	48,143	173,678	2,378,303	3,514	3,492	138,493	2,817,938
1980	95,903	4,724	59,801	235,749	3,149,510	4,830	4,778	191,591	3,746,886
1981	118,519	5,968	66,233	266,265	3,439,378	6,102	5,191	239,468	4,147,124
1982	134,075	6,709	67,306	311,869	3,851,606	6,863	6,381	270,045	4,654,854
1983	184,922	9,243	81,131	426,515	5,033,317	9,452	8,496	372,225	6,125,301
1984	194,203	9,654	95,833	471,841	5,638,512	9,872	8,724	389,826	6,818,465
1985	213,787	10,587	117,647	515,748	6,344,401	10,827	9,998	428,316	7,651,311
1986	212,383	10,557	111,530	541,989	6,490,322	10,797	10,714	426,316	7,814,608
1987	208,129	10,405	109,985	536,458	6,426,143	10,643	10,679	418,968	7,731,410
1988	203,980	10,235	123,019	517,740	6,398,408	10,467	10,364	411,376	7,685,589
1989	223,227	11,226	115,874	562,359	6,724,934	11,483	11,061	450,728	8,110,892
1990	265,877	13,399	146,242	653,205	7,987,241	13,702	13,124	537,381	9,630,171
1991	275,782	13,856	143,870	661,893	8,099,245	14,170	13,277	556,544	9,778,637
1992	320,325	16,153	162,423	767,490	9,151,058	16,523	18,312	647,676	11,099,960
1993	358,738	17,922	184,268	827,815	10,343,012	18,329	19,494	721,861	12,491,439
1994	348,205	17,513	228,722	821,115	10,650,251	17,914	18,904	703,110	12,805,734
1995	386,995	19,494	216,089	880,023	10,963,127	19,940	20,274	782,047	13,287,989
1996	401,434	20,099	244,269	962,128	12,035,905	20,562	22,681	808,751	14,515,829
1997	403,576	20,167	267,032	980,945	12,127,000	20,630	21,963	812,249	14,653,562
1998	404,223	20,156	270,674	965,527	12,306,666	20,616	22,479	812,668	14,823,009
1999	385,524	19,161	273,008	927,875	11,964,644	19,600	22,169	773,794	14,385,775
2000	386,512	19,210	273,408	930,164	11,991,552	19,651	22,195	775,765	14,418,457
2001	387,223	19,245	273,690	931,781	12,010,618	19,686	22,214	777,194	14,441,651
2002	387,374	19,252	273,751	932,131	12,014,751	19,693	22,218	777,497	14,446,667
2003	387,447	19,256	273,780	932,300	12,016,736	19,697	22,220	777,644	14,449,080
2004	387,538	19,262	273,817	932,513	12,019,248	19,701	22,222	777,826	14,452,127
2005	387,076	19,238	273,634	931,434	12,006,650	19,677	22,210	776,904	14,436,823
2006	387,117	19,241	273,652	931,534	12,007,765	19,678	22,212	776,987	14,438,186
2007	387,178	19,245	273,676	931,673	12,009,426	19,683	22,213	777,109	14,440,203
2008	387,236	19,246	273,699	931,805	12,010,949	19,687	22,215	777,222	14,442,059
2009	387,293	19,249	273,720	931,936	12,012,518	19,689	22,216	777,336	14,443,957
2010	387,348	19,251	273,747	932,060	12,014,026	19,692	22,218	777,449	14,445,791
2011	387,396	19,254	273,764	932,168	12,015,270	19,694	22,218	777,542	14,447,306
2012	387,452	19,255	273,786	932,295	12,016,784	19,697	22,220	777,652	14,449,141
2013	387,611	19,265	273,848	932,663	12,021,078	19,705	22,224	777,968	14,454,362
2014	387,649	19,267	273,873	932,741	12,022,091	19,707	22,225	778,048	14,455,601
2015	387,733	19,272	273,899	932,945	12,024,430	19,711	22,227	778,215	14,458,432
2016	387,717	19,271	273,893	932,911	12,024,015	19,709	22,227	778,186	14,457,929
2017	387,728	19,272	273,896	932,934	12,024,285	19,711	22,227	778,204	14,458,257
2018	387,741	19,273	273,904	932,968	12,024,671	19,711	22,227	778,232	14,458,727
2019	387,742	19,273	273,903	932,970	12,024,694	19,711	22,227	778,235	14,458,755
2020	387,744	19,273	273,905	932,971	12,024,715	19,711	22,227	778,237	14,458,783
2021	387,614	19,266	273,850	932,670	12,021,171	19,705	22,224	777,975	14,454,475
2022	387,611	19,266	273,851	932,663	12,021,125	19,705	22,224	777,971	14,454,416
2023	387,608	19,265	273,848	932,657	12,021,044	19,705	22,224	777,965	14,454,316
2024	387,611	19,265	273,849	932,661	12,021,077	19,705	22,224	777,968	14,454,360
2025	387,603	19,265	273,845	932,646	12,020,872	19,704	22,224	777,954	14,454,113
2026	387,594	19,265	273,842	932,625	12,020,624	19,704	22,224	777,936	14,453,814
2027	387,590	19,265	273,842	932,612	12,020,533	19,704	22,224	777,929	14,453,699
2028	387,524	19,260	273,815	932,462	12,018,737	19,701	22,222	777,796	14,451,517
2029	387,524	19,260	273,815	932,462	12,018,733	19,701	22,222	777,797	14,451,514
2030	387,530	19,261	273,818	932,473	12,018,894	19,701	22,222	777,808	14,451,707
2031	387,514	19,260	273,811	932,443	12,018,499	19,700	22,222	777,779	14,451,228
2032	387,515	19,260	273,813	932,446	12,018,524	19,700	22,222	777,782	14,451,262
2033	387,518	19,260	273,814	932,447	12,018,575	19,701	22,222	777,787	14,451,324
2034	387,514	19,260	273,811	932,442	12,018,486	19,699	22,221	777,778	14,451,211
2035	387,533	19,261	273,821	932,485	12,018,983	19,701	22,222	777,815	14,451,821
TOTAL	19,968,632	994,021	13,395,530	47,988,028	613,707,787	1,016,705	1,111,660	40,110,397	738,292,760

TABLE B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	65,073	28,084	11,697	2,958	19,290	1,088	24,380	8,171	52,314	14,399
1969	86,340	70,345	15,522	3,924	25,595	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	600,343	376,950	187,027	54,153	308,449	10,711	373,191	78,304	1,148,279	300,751
1979	661,123	349,073	196,264	52,212	323,679	12,125	401,467	87,126	1,125,451	302,509
1980	858,071	415,945	253,097	71,923	417,412	15,433	508,394	112,859	1,518,448	401,234
1981	999,467	510,598	284,433	73,376	469,083	18,014	586,963	131,743	1,544,857	419,611
1982	1,128,701	558,238	321,034	89,587	529,451	20,196	649,398	148,026	1,871,041	497,998
1983	1,745,014	818,028	450,034	119,238	742,191	30,646	922,097	225,802	2,372,802	639,624
1984	2,104,258	942,743	548,531	150,143	904,640	36,785	1,111,621	271,006	3,017,577	803,153
1985	2,191,317	1,070,207	590,780	159,378	974,311	39,530	1,203,974	281,441	3,257,662	868,279
1986	2,319,958	1,106,294	620,076	163,066	1,022,625	40,185	1,271,603	297,006	3,325,463	894,949
1987	2,324,752	1,017,801	618,796	164,856	1,020,519	41,074	1,264,387	302,625	3,358,305	902,277
1988	2,312,460	1,045,769	651,081	176,130	1,073,763	40,755	1,325,320	299,582	3,594,651	962,844
1989	2,273,123	1,085,291	611,421	169,521	1,008,358	39,382	1,237,067	291,898	3,491,653	930,226
1990	2,593,581	1,256,198	699,310	198,798	1,153,308	44,767	1,404,797	330,766	4,040,674	1,066,483
1991	2,717,435	1,194,881	758,899	209,320	1,251,579	48,603	1,536,105	355,651	4,325,133	1,144,131
1992	2,776,234	1,574,746	750,697	198,497	1,238,049	49,740	1,539,349	362,175	4,136,338	1,116,619
1993	3,059,830	1,662,081	840,343	231,950	1,385,898	55,295	1,701,602	405,288	4,964,898	1,322,387
1994	3,065,018	1,653,983	872,542	244,783	1,438,999	55,301	1,794,606	406,367	5,164,804	1,369,123
1995	3,075,943	1,673,732	851,863	230,420	1,404,889	57,762	1,773,758	436,170	5,025,825	1,326,684
1996	3,496,021	2,025,773	896,068	239,516	1,477,794	62,962	1,872,233	473,844	4,935,019	1,298,434
1997	3,616,981	2,112,655	952,300	297,950	1,570,556	63,674	1,898,949	470,517	5,949,755	1,520,201
1998	3,542,741	1,998,856	929,949	258,825	1,533,671	64,216	1,887,038	462,933	5,308,665	1,421,138
1999	3,465,768	1,975,640	907,901	250,828	1,497,317	62,080	1,846,798	455,048	5,184,205	1,391,346
2000	3,475,963	2,010,778	909,767	248,823	1,500,381	62,316	1,855,963	456,648	5,149,268	1,386,203
2001	3,483,859	1,983,046	914,496	251,226	1,508,183	62,498	1,863,196	457,894	5,192,534	1,395,972
2002	3,485,410	1,996,823	926,695	265,479	1,528,308	62,531	1,864,583	458,136	5,445,958	1,445,663
2003	3,486,161	1,994,899	926,434	264,848	1,527,878	62,553	1,865,253	458,254	5,434,765	1,443,603
2004	3,487,119	1,994,610	919,408	255,867	1,516,290	62,575	1,866,119	458,405	5,275,198	1,412,629
2005	3,482,171	1,989,832	920,282	259,060	1,517,729	62,460	1,861,552	457,621	5,331,710	1,422,827
2006	3,482,597	1,991,733	923,214	262,465	1,522,570	62,467	1,861,938	457,689	5,392,251	1,434,708
2007	3,483,223	1,993,476	917,818	255,614	1,513,665	62,483	1,862,492	457,790	5,270,501	1,411,055
2008	3,483,805	1,990,676	923,485	262,292	1,523,013	62,495	1,863,014	457,878	5,389,220	1,434,312
2009	3,484,420	1,996,718	918,762	256,264	1,515,220	62,508	1,863,570	457,973	5,282,138	1,413,524
2010	3,484,922	1,992,681	910,279	245,719	1,501,228	62,520	1,863,972	458,053	5,094,748	1,377,042
2011	3,485,400	1,995,633	920,779	258,338	1,518,550	62,529	1,864,408	458,127	5,319,060	1,420,880
2012	3,485,979	1,989,680	924,168	262,235	1,524,144	62,545	1,864,929	458,219	5,388,409	1,434,505
2013	3,487,618	1,999,401	926,418	264,301	1,527,856	62,584	1,866,401	458,475	5,425,193	1,441,952
2014	3,487,747	1,997,522	918,376	254,519	1,514,585	62,584	1,866,313	458,486	5,251,387	1,408,035
2015	3,488,876	1,997,440	929,885	268,009	1,533,572	62,613	1,867,517	458,671	5,491,205	1,455,032
2016	3,488,717	1,995,368	914,204	248,923	1,507,700	62,611	1,867,377	458,646	5,151,980	1,388,825
2017	3,488,823	1,997,501	920,802	256,945	1,518,595	62,613	1,867,464	458,663	5,294,518	1,416,653
2018	3,488,966	1,995,036	924,219	261,050	1,524,225	62,615	1,867,597	458,687	5,367,541	1,430,923
2019	3,488,978	1,998,926	920,498	256,501	1,518,088	62,616	1,867,609	458,689	5,286,711	1,415,154
2020	3,488,971	1,997,718	928,228	265,953	1,530,844	62,614	1,867,590	458,687	5,454,684	1,447,924
2021	3,487,620	1,996,312	922,505	259,532	1,521,400	62,584	1,866,378	458,473	5,340,418	1,425,406
2022	3,487,604	1,995,332	920,274	256,815	1,517,723	62,584	1,866,364	458,470	5,292,143	1,415,987
2023	3,487,574	1,996,720	924,469	261,947	1,524,637	62,584	1,866,334	458,467	5,383,364	1,433,777
2024	3,487,584	1,994,489	921,846	258,742	1,520,315	62,584	1,866,350	458,468	5,326,384	1,422,662
2025	3,487,521	1,997,482	922,085	259,054	1,520,702	62,581	1,866,292	458,459	5,331,944	1,423,739
2026	3,487,416	1,994,357	922,375	259,455	1,521,186	62,580	1,866,195	458,443	5,339,056	1,425,110
2027	3,487,389	1,997,370	919,347	255,760	1,516,184	62,580	1,866,181	458,440	5,273,399	1,412,298
2028	3,486,696	1,994,592	923,683	261,354	1,523,344	62,563	1,865,551	458,330	5,372,754	1,431,566
2029	3,486,707	1,995,950	923,319	260,903	1,522,744	62,563	1,865,564	458,331	5,364,746	1,430,007
2030	3,486,769	1,994,563	925,922	264,051	1,527,031	62,565	1,865,624	458,340	5,420,695	1,440,933
2031	3,486,592	1,995,069	928,464	267,241	1,531,229	62,561	1,865,447	458,314	5,477,398	1,451,965
2032	3,486,611	1,994,578	919,529	256,319	1,516,489	62,561	1,865,468	458,316	5,283,289	1,414,100
2033	3,486,631	1,996,163	921,097	258,223	1,519,075	62,561	1,865,487	458,321	5,317,144	1,420,706
2034	3,486,595	1,994,504	922,719	260,224	1,521,750	62,561	1,865,454	458,315	5,352,680	1,427,634
2035	3,486,773	1,971,689	931,071	270,349	1,535,535	62,565	1,865,616	458,339	5,532,645	1,462,772
TOTAL	179,814,372	100,071,729	47,913,450	13,396,882	79,018,991	3,221,094	97,150,861	23,623,355	276,109,295	73,599,585

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	2,745,160
1969	11,706	1,295,613	12,610	1,654,812	0	0	0	0	52,963	4,074,939
1970	14,621	1,624,573	15,745	2,069,923	0	0	0	0	69,745	4,676,282
1971	24,302	2,716,582	26,120	3,421,556	0	0	54	54	55,532	6,185,714
1972	89,132	8,038,457	68,368	10,035,856	0	0	40	40	80,412	12,998,869
1973	117,781	9,890,314	78,312	12,289,298	0	0	1	1	54,219	15,194,233
1974	128,166	11,581,499	83,451	14,166,550	0	0	143	143	76,783	17,372,561
1975	147,900	13,584,540	101,892	16,593,959	0	0	1,069	1,069	84,546	20,517,423
1976	158,663	12,862,497	94,799	16,037,424	0	0	139	139	106,717	20,027,213
1977	178,774	16,203,703	121,966	19,892,683	0	0	892	892	98,617	24,213,489
1978	186,386	17,811,759	132,438	21,568,741	0	0	39	39	100,785	26,012,786
1979	186,685	16,414,295	126,757	20,238,766	0	0	3,235	3,235	119,352	24,675,598
1980	248,407	20,927,493	154,101	25,902,817	0	0	416	416	178,817	32,039,355
1981	258,674	23,691,574	186,301	29,174,694	0	0	3,847	3,847	185,208	35,458,115
1982	308,030	28,023,111	209,270	34,354,081	0	0	10,956	10,956	181,914	41,662,234
1983	394,485	38,402,774	321,350	47,184,085	0	0	(422)	(422)	220,783	56,229,753
1984	496,665	45,551,121	381,622	56,319,865	0	0	643	643	225,922	67,016,035
1985	536,359	50,598,413	421,801	62,193,452	0	0	2,599	2,599	341,827	74,292,571
1986	552,221	52,975,993	443,423	65,032,862	0	0	2,595	2,595	279,652	76,982,745
1987	557,188	49,929,617	403,568	61,905,765	0	0	2,595	2,595	343,364	74,293,127
1988	594,940	51,427,648	407,935	63,912,878	0	0	2,600	2,600	365,285	76,339,785
1989	575,444	52,508,553	429,870	64,651,807	0	0	2,672	2,672	421,239	78,493,779
1990	660,369	60,245,150	487,029	74,181,230	0	0	2,687	2,687	470,407	90,247,040
1991	707,804	60,507,761	466,977	75,224,279	0	0	2,730	2,730	212,563	90,337,848
1992	689,194	67,361,770	500,808	82,294,216	0	0	2,774	2,774	549,042	100,777,471
1993	818,477	67,692,031	528,605	84,668,685	0	0	2,529	2,529	619,323	106,026,585
1994	846,172	67,147,163	490,419	84,549,280	0	0	3,058	3,058	608,151	106,797,007
1995	819,560	67,870,636	508,306	85,055,548	0	0	3,210	3,210	526,359	106,863,331
1996	800,856	78,483,196	617,229	96,678,945	0	0	3,370	3,370	624,547	121,040,408
1997	944,521	82,255,107	636,125	102,289,291	0	0	3,538	3,538	614,468	127,486,212
1998	878,025	76,586,438	606,013	95,478,508	0	0	3,538	3,538	617,330	120,630,187
1999	859,324	75,263,959	595,275	93,755,489	0	0	3,538	3,538	635,424	118,661,514
2000	855,723	76,037,384	605,781	94,554,998	0	0	3,538	3,538	636,839	119,508,309
2001	861,939	75,844,919	597,778	94,417,540	0	0	3,538	3,538	637,736	119,404,148
2002	894,466	77,374,407	601,857	96,350,316	0	0	3,538	3,538	637,932	121,344,081
2003	893,101	76,712,935	601,303	95,671,987	0	0	3,538	3,538	638,028	120,669,216
2004	872,779	76,621,982	601,235	95,344,216	0	0	3,538	3,538	638,152	120,345,821
2005	879,576	76,435,710	599,742	95,220,272	0	0	3,538	3,538	637,559	120,200,163
2006	887,353	76,506,717	600,307	95,386,009	0	0	3,538	3,538	637,614	120,367,852
2007	871,844	76,540,506	600,831	95,241,298	0	0	3,538	3,538	637,694	120,226,035
2008	887,064	76,643,594	600,017	95,520,865	0	0	3,538	3,538	637,768	120,508,263
2009	873,429	76,590,515	601,805	95,316,846	0	0	3,538	3,538	637,843	120,306,961
2010	849,511	76,051,226	600,628	94,492,529	0	0	3,538	3,538	637,924	119,485,389
2011	878,231	76,487,964	601,500	95,271,399	0	0	3,538	3,538	637,979	120,266,367
2012	887,144	76,680,215	599,765	95,561,937	0	0	3,538	3,538	638,054	120,559,544
2013	891,986	77,213,632	602,648	96,168,465	0	0	3,538	3,538	638,262	121,173,563
2014	869,764	76,415,014	602,095	95,106,427	0	0	3,538	3,538	638,341	120,113,725
2015	900,530	77,276,091	602,094	96,331,535	0	0	3,538	3,538	638,425	121,342,492
2016	857,149	76,284,560	601,483	94,827,543	0	0	3,538	3,538	638,404	119,837,771
2017	875,382	76,777,144	602,114	95,537,217	0	0	3,538	3,538	638,419	120,547,914
2018	884,732	76,779,886	601,390	95,646,867	0	0	3,538	3,538	638,437	120,658,234
2019	874,399	76,703,498	602,532	95,454,199	0	0	3,538	3,538	638,438	120,465,600
2020	895,870	77,040,097	602,178	96,041,358	0	0	3,538	3,538	638,441	121,052,824
2021	881,148	76,746,015	601,743	95,569,534	0	0	3,538	3,538	638,270	120,574,822
2022	874,972	76,660,285	601,456	95,410,009	0	0	3,538	3,538	638,269	120,415,217
2023	886,633	76,825,963	601,861	95,714,330	0	0	3,538	3,538	638,265	120,719,391
2024	879,350	76,853,680	601,207	95,653,661	0	0	3,538	3,538	638,265	120,658,786
2025	880,057	76,625,549	602,083	95,437,548	0	0	3,538	3,538	638,255	120,442,314
2026	880,960	76,846,659	601,161	95,664,953	0	0	3,538	3,538	638,243	120,669,295
2027	872,564	76,541,050	602,047	95,264,609	0	0	3,538	3,538	638,238	120,268,780
2028	885,202	76,774,276	601,217	95,641,128	0	0	3,538	3,538	638,152	120,642,170
2029	884,179	76,727,439	601,617	95,584,069	0	0	3,538	3,538	638,152	120,585,107
2030	891,335	77,042,532	601,212	95,981,572	0	0	3,538	3,538	638,160	120,982,892
2031	898,571	76,882,615	601,358	95,906,824	0	0	3,538	3,538	638,142	120,907,478
2032	873,756	76,634,107	601,214	95,366,337	0	0	3,538	3,538	638,143	120,367,043
2033	878,086	76,798,530	601,680	95,583,704	0	0	3,538	3,538	638,145	120,584,495
2034	882,629	76,605,427	601,192	95,441,684	0	0	3,538	3,538	638,141	120,442,312
2035	905,648	77,166,427	594,487	96,243,916	0	0	3,538	3,538	638,164	121,245,409
TOTAL	45,496,712	3,991,194,634	31,312,607	4,961,923,567	0	0	192,453	192,453	32,274,075	6,220,052,582

TABLE B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara 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	35,231	97,598	132,829	356,106	478,592	1,067,069	1,901,767	0	166,176	166,176
1992	74,573	230,716	305,289	405,244	529,119	1,183,466	2,117,829	0	0	0
1993	89,199	247,939	337,138	841,254	256,891	1,552,324	2,650,469	0	0	0
1994	112,053	229,825	341,878	502,311	560,240	1,396,626	2,459,177	0	0	0
1995	95,995	233,546	329,541	826,819	458,288	789,560	2,074,667	0	0	0
1996	150,710	363,183	513,893	265,701	661,380	670,068	1,597,149	45,373	200,378	245,751
1997	163,753	427,788	591,541	1,009,018	921,277	2,193,517	4,123,812	251,947	2,289,682	2,541,629
1998	160,283	408,782	569,065	933,237	852,087	2,028,777	3,814,101	258,724	2,351,274	2,609,998
1999	153,409	380,280	533,689	848,296	774,532	1,844,123	3,466,951	235,176	2,137,268	2,372,444
2000	128,437	278,188	406,625	671,025	612,676	1,458,752	2,742,453	186,031	1,651,307	1,837,338
2001	99,236	158,285	257,521	495,133	452,077	1,076,375	2,023,585	725,514	1,320,028	2,045,542
2002	95,608	149,312	244,920	459,542	419,581	999,003	1,878,126	673,362	1,225,142	1,898,504
2003	87,924	133,728	221,652	405,050	369,828	880,544	1,655,422	593,516	1,079,868	1,673,384
2004	93,391	138,622	232,013	413,473	377,518	898,853	1,689,844	605,858	1,102,322	1,708,180
2005	102,830	147,001	249,831	438,190	400,087	952,588	1,790,865	642,077	1,168,220	1,810,297
2006	105,759	147,143	252,902	438,343	400,227	952,919	1,791,489	642,301	1,168,628	1,810,929
2007	109,234	147,150	256,384	438,095	400,000	952,380	1,790,475	641,937	1,167,966	1,809,903
2008	135,440	175,843	311,283	523,193	477,699	1,137,377	2,138,269	766,632	1,394,840	2,161,472
2009	139,598	175,874	315,472	522,962	477,487	1,136,873	2,137,322	766,292	1,394,221	2,160,513
2010	143,002	174,985	317,987	519,998	474,781	1,130,430	2,125,209	761,949	1,386,320	2,148,269
2011	147,970	175,107	323,077	520,036	474,816	1,130,513	2,125,365	762,005	1,386,423	2,148,428
2012	152,553	175,662	328,215	521,362	476,026	1,133,397	2,130,785	763,948	1,389,958	2,153,906
2013	70,849	79,055	149,904	234,492	214,101	509,764	958,357	343,599	625,157	968,756
2014	32,563	35,244	67,807	104,478	95,392	227,124	426,994	153,090	278,537	431,627
2015	14,237	14,962	29,199	44,325	40,470	96,358	181,153	64,948	118,170	183,118
2016	7,263	7,428	14,691	22,008	20,094	47,843	89,945	32,248	58,673	90,921
2017	3,380	3,337	6,717	9,977	9,109	21,688	40,774	14,618	26,597	41,215
2018	3,467	3,335	6,802	9,973	9,106	21,679	40,758	14,613	26,588	41,201
2019	3,566	3,347	6,913	10,004	9,135	21,750	40,889	14,660	26,674	41,334
2020	3,663	3,355	7,018	10,030	9,157	21,804	40,991	14,697	26,739	41,436
2021	3,671	3,348	7,019	10,011	9,141	21,763	40,915	14,669	26,689	41,358
2022	3,680	3,356	7,036	10,036	9,162	21,816	41,014	14,705	26,754	41,459
2023	3,690	3,367	7,057	10,064	9,190	21,879	41,133	14,747	26,832	41,579
2024	7,629	6,959	14,588	20,805	18,996	45,228	85,029	30,485	55,466	85,951
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	3,222,533	5,354,891	8,577,424	16,008,224	15,204,080	43,142,482	74,354,786	10,049,721	25,302,897	35,352,618

TABLE B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

	San Joaquin Valley Area							
			Kern County Water Agency					
Calendar Year	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Municipal and Industrial (13)	Agricultural (14)	County of Kings (15)	Oak Flat Water District (16)	Tulare Lake Basin Water Storage District (17)	Total (18)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	159,191	0	34,366	2,964,185	13,174	9,673	3,733	3,184,322
1984	389,518	0	816,103	9,095,509	26,774	33,576	49,601	10,411,081
1985	527,952	59,324	1,053,957	11,978,046	38,810	42,297	1,253,257	14,953,643
1986	552,171	12,858	885,988	11,788,715	40,659	38,275	872,009	14,190,675
1987	450,941	24,936	1,192,388	10,448,063	39,134	37,538	911,938	13,104,938
1988	425,261	31,146	1,130,988	9,910,050	35,851	26,779	850,225	12,410,300
1989	331,852	17,226	607,908	7,400,983	22,959	24,306	754,007	9,159,241
1990	219,381	7,731	428,482	5,216,562	12,089	12,046	344,943	6,241,234
1991	13,067	3,115	571,789	146,493	0	1,356	30,730	766,550
1992	244,630	13,935	706,155	5,788,599	18,587	15,716	480,903	7,268,525
1993	471,633	25,539	1,202,271	11,403,464	37,270	36,797	1,159,731	14,336,705
1994	262,289	15,176	902,359	6,792,956	19,276	19,080	568,086	8,579,222
1995	620,739	16,683	1,377,111	12,477,163	40,915	36,060	1,041,987	15,610,658
1996	402,717	14,911	1,150,982	9,559,165	31,929	31,032	2,074,688	13,265,424
1997	436,116	24,515	1,030,494	8,765,769	32,686	31,767	968,330	11,289,677
1998	403,362	22,674	953,100	8,107,430	30,232	29,381	895,605	10,441,784
1999	366,650	20,610	866,351	7,369,513	27,479	26,708	814,089	9,491,400
2000	290,030	16,303	685,307	5,829,487	21,737	21,126	643,967	7,507,957
2001	231,367	12,030	583,889	4,964,071	16,040	15,588	475,167	6,298,152
2002	214,736	11,165	541,918	4,607,243	14,887	14,468	441,011	5,845,428
2003	189,274	9,840	477,659	4,060,926	13,121	12,753	388,716	5,152,289
2004	193,210	10,045	487,591	4,145,368	13,394	13,018	396,799	5,259,425
2005	204,759	10,646	516,740	4,393,184	14,195	13,796	420,520	5,573,840
2006	204,832	10,649	516,920	4,394,715	14,199	13,801	420,667	5,575,783
2007	204,715	10,644	516,626	4,392,228	14,192	13,793	420,429	5,572,627
2008	244,481	12,711	616,980	5,245,406	16,948	16,472	502,096	6,655,094
2009	244,372	12,706	616,706	5,243,081	16,941	16,464	501,874	6,652,144
2010	242,987	12,634	613,211	5,213,366	16,845	16,371	499,029	6,614,443
2011	243,005	12,635	613,256	5,213,751	16,846	16,373	499,066	6,614,932
2012	243,625	12,666	614,821	5,227,045	16,889	16,414	500,339	6,631,799
2013	109,574	5,698	276,525	2,350,953	7,596	7,382	225,036	2,982,764
2014	48,820	2,539	123,205	1,047,462	3,385	3,290	100,264	1,328,965
2015	20,712	1,077	52,270	444,387	1,436	1,395	42,538	563,815
2016	10,284	535	25,952	220,645	713	693	21,120	279,942
2017	4,662	243	11,765	100,021	323	314	9,574	126,902
2018	4,660	242	11,760	99,984	323	314	9,570	126,853
2019	4,675	243	11,798	100,307	324	315	9,601	127,263
2020	4,687	244	11,827	100,556	325	316	9,625	127,580
2021	4,678	243	11,806	100,367	324	315	9,607	127,340
2022	4,689	244	11,834	100,610	325	316	9,631	127,649
2023	4,703	245	11,868	100,904	326	317	9,658	128,021
2024	9,722	506	24,534	208,585	674	655	19,966	264,642
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	9,460,729	477,112	22,897,560	207,117,317	690,132	668,446	19,659,732	260,971,028

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	1,049,969	531,949	1,023,921	125,885	1,688,805	65,207	473,994	488,931	540,920	797,713
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	3,558,941	1,332,188	2,255,992	42,874	3,720,922	60,606	1,101,630	640,821	425,904	1,406,040
1994	3,967,923	1,451,771	1,346,482	74,953	2,220,617	88,637	1,372,478	679,551	872,225	1,454,186
1995	4,286,199	1,884,735	2,476,615	44,064	4,084,806	43,509	873,441	630,974	74,620	1,385,403
1996	4,160,965	575,876	5,205,758	347,224	8,586,208	162,698	1,202,162	829,972	2,259,044	1,338,693
1997	4,384,035	2,430,686	1,978,532	449,666	3,263,293	166,553	4,332,765	1,252,768	5,481,647	685,206
1998	4,256,176	2,391,837	1,829,938	415,894	3,018,209	154,044	4,007,360	1,158,680	4,436,213	712,962
1999	4,130,634	2,304,762	1,663,382	298,833	2,743,499	140,024	3,642,620	1,053,220	4,176,456	648,071
2000	3,435,226	1,926,457	1,315,780	111,073	2,170,183	110,762	2,881,413	833,126	3,360,651	512,641
2001	4,917,937	1,665,459	970,880	243,771	1,601,321	81,729	2,135,095	614,743	2,521,766	1,210,448
2002	4,564,426	1,545,742	901,091	226,248	1,486,215	75,854	1,981,621	570,553	2,340,496	1,123,439
2003	4,023,187	1,362,452	794,241	199,420	1,309,984	66,859	1,746,644	502,898	2,062,966	990,224
2004	4,106,844	1,390,782	810,757	203,567	1,337,223	68,249	1,782,964	513,355	2,105,863	1,010,814
2005	4,352,357	1,473,924	859,225	215,737	1,417,163	72,330	1,889,551	544,045	3,347,630	1,071,242
2006	4,353,874	1,474,438	859,525	215,811	1,417,658	72,355	1,890,210	544,234	3,348,798	1,071,615
2007	4,351,409	1,473,603	859,038	215,690	1,416,855	72,314	1,889,140	543,926	3,346,901	1,071,009
2008	5,196,658	1,759,847	1,025,904	257,586	1,692,075	86,361	2,256,100	649,582	3,997,028	1,279,049
2009	5,194,353	1,759,067	1,025,449	257,472	1,691,325	86,323	2,255,100	649,294	3,995,256	1,278,482
2010	5,164,915	1,749,098	1,019,638	256,012	1,681,740	85,833	2,242,320	645,614	4,528,779	1,271,236
2011	5,165,296	1,749,227	1,019,713	256,032	1,681,864	85,839	2,242,485	645,662	4,529,114	1,271,330
2012	5,178,468	1,753,687	1,022,313	256,684	1,686,153	86,058	2,248,203	647,309	4,540,662	1,274,572
2013	2,329,104	788,751	459,802	115,448	758,376	38,706	1,011,168	291,138	2,042,240	573,260
2014	1,037,727	351,427	204,864	51,437	337,893	17,246	450,523	129,716	909,916	255,415
2015	440,256	149,093	86,914	21,823	143,351	7,316	191,136	55,032	386,032	108,360
2016	218,594	74,026	43,154	10,836	71,176	3,632	94,902	27,324	191,670	53,803
2017	99,092	33,557	19,563	4,911	32,265	1,647	43,020	12,387	86,887	24,389
2018	99,055	33,544	19,555	4,910	32,253	1,646	43,004	12,382	86,854	24,380
2019	99,375	33,653	19,618	4,926	32,357	1,652	43,142	12,422	87,135	24,459
2020	99,622	33,736	19,667	4,938	32,438	1,655	43,250	12,453	87,352	24,519
2021	99,434	33,674	19,630	4,928	32,377	1,652	43,169	12,430	87,187	24,474
2022	99,675	33,756	19,677	4,941	32,455	1,656	43,274	12,459	87,399	24,533
2023	99,966	33,853	19,735	4,955	32,550	1,661	43,400	12,495	87,654	24,604
2024	206,647	69,980	40,796	10,243	67,285	3,435	89,714	25,831	181,195	50,862
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	118,749,949	48,160,824	45,207,541	6,121,047	74,161,165	2,342,153	47,733,712	17,480,133	75,739,336	31,120,900

TABLE B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				Total State Water Project (a
	San Gorgonio Pass Water Agency (29)	Metropolitan Water District of Southern California (30)	Ventura County Flood Control District (31)	Total (32)	City of Yuba City (33)	County of Butte (34)	Plumas County FC&WCD (35)	Total (36)	(37)
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0
1983	0	12,791,358	0	16,045,220	0	0	0	0	20,182,468
1984	0	39,229,567	0	47,840,887	0	0	0	0	60,556,781
1985	0	77,446,522	0	89,844,436	0	0	0	0	108,590,343
1986	0	77,581,287	0	90,192,510	0	0	0	0	107,702,921
1987	0	68,939,195	0	82,614,055	0	0	0	0	99,411,597
1988	0	79,936,309	0	92,720,660	0	0	0	0	108,898,833
1989	0	68,311,546	0	78,302,473	0	0	0	0	89,857,307
1990	0	83,964,409	277,885	95,002,982	0	0	0	0	104,000,038
1991	0	54,294,659	132,405	61,214,358	0	0	0	0	64,181,680
1992	0	72,401,054	0	82,482,592	0	0	0	0	92,174,235
1993	0	55,304,138	0	69,850,056	0	0	0	0	87,174,368
1994	0	72,911,055	0	86,439,878	0	0	0	0	97,820,155
1995	0	40,505,517	0	56,289,883	0	0	0	0	74,304,749
1996	0	47,730,723	0	72,399,323	0	0	0	0	88,021,540
1997	0	54,544,872	776,863	79,746,886	0	0	0	0	98,293,545
1998	158,436	66,048,897	718,518	89,307,164	0	0	0	0	106,742,112
1999	216,023	70,536,900	653,120	92,207,544	0	0	0	0	108,072,028
2000	227,841	77,862,485	516,636	95,264,274	0	0	0	0	107,758,647
2001	168,117	80,212,307	762,425	97,105,998	0	0	0	0	107,730,798
2002	195,041	74,446,482	707,620	90,164,828	0	0	0	0	100,031,806
2003	206,296	65,618,785	623,712	79,507,668	0	0	0	0	88,210,415
2004	228,135	66,983,245	636,681	81,178,479	0	0	0	0	90,067,941
2005	260,371	70,987,591	674,743	87,165,909	0	0	0	0	96,590,742
2006	279,066	71,012,338	674,978	87,214,900	0	0	0	0	96,646,003
2007	314,237	70,972,134	674,596	87,200,852	0	0	0	0	96,630,241
2008	375,276	84,758,273	805,634	104,139,373	0	0	0	0	115,405,491
2009	375,110	84,720,695	805,277	104,093,203	0	0	0	0	115,358,654
2010	465,679	84,240,552	800,713	104,152,129	0	0	0	0	115,358,037
2011	465,713	84,246,773	800,772	104,159,820	0	0	0	0	115,371,622
2012	466,900	84,461,595	802,814	104,425,418	0	0	0	0	115,670,123
2013	209,996	37,988,036	361,079	46,967,104	0	0	0	0	52,026,885
2014	93,563	16,925,492	160,878	20,926,097	0	0	0	0	23,181,490
2015	50,982	7,180,657	68,253	8,889,205	0	0	0	0	9,846,490
2016	25,313	3,565,298	33,888	4,413,616	0	0	0	0	4,889,115
2017	11,475	1,616,202	15,362	2,000,757	0	0	0	0	2,216,365
2018	11,471	1,615,591	15,356	2,000,001	0	0	0	0	2,215,615
2019	11,508	1,620,813	15,406	2,006,466	0	0	0	0	2,222,865
2020	14,176	1,624,840	15,444	2,014,090	0	0	0	0	2,231,115
2021	14,701	1,621,787	15,415	2,010,858	0	0	0	0	2,227,490
2022	14,737	1,625,723	15,453	2,015,738	0	0	0	0	2,232,896
2023	14,780	1,630,456	15,498	2,021,607	0	0	0	0	2,239,397
2024	30,552	3,370,436	32,036	4,179,012	0	0	0	0	4,629,222
2025	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
TOTAL	4,905,495	2,123,386,594	12,609,460	2,607,718,309	0	0	0	0	2,986,974,165

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 Barker Slough Pumping Plant		Reach 3A Cordelia Pumping Plant Solano County WA		Reach 3B Cordelia Pumping Plant Napa County FC&WCD (a		Reach 1 South Bay and Del Valle Pumping Plants (b		Reach 1 Banks Pumping Plant	
	Unit Rate (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	5.1337448	1.2030681	1.2030681
1968	0	0	0	0	5.7570016	5.7570016	3.3315620	4.8750942	1.5435322	1.5435322
1969	0	0	0	0	3.1823595	3.1823595	3.6949019	4.8016170	1.1067151	1.1067151
1970	0	0	0	0	3.7584301	3.7584301	4.4256141	5.3721490	0.9465349	0.9465349
1971	0	0	0	0	4.2082507	4.2082507	3.8714396	4.7522833	0.8808437	0.8808437
1972	0	0	0	0	3.9577735	3.9577735	4.3250690	5.2281686	0.9030996	0.9030996
1973	0	0	0	0	3.8103903	3.8103903	5.2455409	6.1841800	0.9386391	0.9386391
1974	0	0	0	0	3.5878850	3.5878850	6.3321503	7.2293909	0.8972406	0.8972406
1975	0	0	0	0	2.1606725	2.1606725	3.7365711	4.8327731	1.0962020	1.0962020
1976	0	0	0	0	2.9283909	2.9283909	4.5191527	5.7132795	1.1941268	1.1941268
1977	0	0	0	0	2.7516411	2.7516411	4.7630172	6.5309908	1.7679736	1.7679736
1978	0	0	0	0	3.5949619	3.5949619	5.2086183	6.8200209	1.6114026	1.6114026
1979	0	0	0	0	2.4747752	2.4747752	4.9524184	7.0889234	2.1365050	2.1365050
1980	0	0	0	0	2.9737588	2.9737588	4.5186576	5.8865852	1.3679276	1.3679276
1981	0	0	0	0	2.6487057	2.6487057	4.3834851	6.4772202	2.0937351	2.0937351
1982	0	0	0	0	10.0239077	10.0239077	4.9779475	6.7284782	1.7505307	1.7505307
1983	0	0	0	0	1.0209882	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	9.5078150	2.9592756	2.9592756
1988	1.1849573	1.1849573	2.0602571	3.2452144	4.4701409	5.6550982	6.2049981	8.9148887	2.7098906	2.7098906
1989	1.1263059	1.1263059	2.6374232	3.7637291	1.0635997	2.1899056	7.6128953	11.0630833	3.4501880	3.4501880
1990	2.2485904	2.2485904	4.3186176	6.5672080	6.2108069	8.4593973	11.9494305	15.9546257	4.0051952	4.0051952
1991	1.3320163	1.3320163	2.6243839	3.9564002	4.2572464	5.5892627	7.5405400	11.2382376	3.6976976	3.6976976
1992	0.7146586	0.7146586	1.4281996	2.1428582	2.3651587	3.0798173	4.1030120	6.3977759	2.2947639	2.2947639
1993	-0.6226136	-0.6226136	-0.8895722	-1.5121858	-1.1899357	-1.8125493	-1.5270499	-1.2809211	0.2461288	0.2461288
1994	1.2825949	1.2825949	2.2404176	3.5230125	4.7714959	6.0540908	8.0648516	11.3250695	3.2602179	3.2602179
1995	0.7403023	0.7403023	1.2730133	2.0133156	2.2327287	2.9730310	3.3110111	5.0499090	1.7388979	1.7388979
1996	1.0550540	1.0550540	1.5171945	2.5722485	3.7440767	4.7991307	10.9955980	13.5543455	2.5587475	2.5587475
1997	2.2485877	2.2485877	2.9121191	5.1607068	7.6705829	9.9191706	11.3483723	15.6975636	4.3491913	4.3491913
1998	2.1584758	2.1584758	2.7895972	4.9480730	7.2674637	9.4259395	10.8521383	15.0433059	4.1911676	4.1911676
1999	1.7961208	1.7961208	2.5012598	4.2973806	6.1307380	7.9268588	10.2758138	14.4437323	4.1679185	4.1679185
2000	2.2277901	2.2277901	2.9247296	5.1525197	7.8699617	10.0977518	13.1665904	18.3423071	5.1757167	5.1757167
2001	3.3099079	3.3099079	6.3558263	9.6657342	8.8937431	12.2036510	15.5855319	21.3911269	5.8055950	5.8055950
2002	3.3785290	3.3785290	6.6399171	10.0184461	8.8109975	12.1895265	16.0280160	21.9905301	5.9625141	5.9625141
2003	3.3952330	3.3952330	6.8289340	10.2241670	8.5597973	11.9550303	16.2458883	22.2820487	6.0361604	6.0361604
2004	3.4228144	3.4228144	7.0289055	10.4517199	8.3654545	11.7882689	16.5205319	22.6507226	6.1301907	6.1301907
2005	3.1411652	3.1411652	6.4715920	9.6127572	7.4135000	10.5546652	15.2107287	20.8525339	5.6418052	5.6418052
2006	3.1212414	3.1212414	6.5235821	9.6448235	7.2686930	10.3899344	15.3329202	21.0163792	5.6834590	5.6834590
2007	3.1291468	3.1291468	6.6011940	9.7303408	7.1172353	10.2463821	15.5153351	21.2603172	5.7449821	5.7449821
2008	3.1292074	3.1292074	6.6722388	9.8014462	6.9289518	10.0581592	15.6822926	21.4839488	5.8016562	5.8016562
2009	3.1352922	3.1352922	6.7447761	9.8800683	6.7927473	9.9280395	15.8528404	21.7132035	5.8603631	5.8603631
2010	3.1462149	3.1462149	6.8279104	9.9741253	6.6748267	9.8210416	16.0482234	21.9569002	5.9086768	5.9086768
2011	3.1433007	3.1433007	6.8923383	10.0356390	6.5120619	9.6553626	16.1995904	22.1598005	5.9602101	5.9602101
2012	3.1484628	3.1484628	6.9630846	10.1115474	6.3975940	9.5460568	16.3659415	22.3823165	6.0163750	6.0163750
2013	3.2064320	3.2064320	7.1630846	10.3695166	6.3737379	9.5801699	16.8360213	23.0123847	6.1763634	6.1763634
2014	3.2171044	3.2171044	7.2588060	10.4759104	6.2614118	9.4785162	17.0610266	23.2443175	6.1832909	6.1832909
2015	3.2131612	3.2131612	7.3215423	10.5347035	6.1280822	9.3412434	17.2084574	23.5080409	6.2995835	6.2995835
2016	3.1599225	3.1599225	7.3020398	10.4619623	5.9488444	9.1087669	17.1626809	23.4473022	6.2846213	6.2846213
2017	3.1361598	3.1361598	7.4539647	10.5901245	5.8042857	8.9404455	17.1919787	23.4864984	6.2945197	6.2945197
2018	3.1152055	3.1152055	7.4723687	10.5875742	5.6713502	8.7865557	17.2343936	23.5433856	6.3089920	6.3089920
2019	3.0874359	3.0874359	7.4732813	10.5607172	5.5320165	8.6194524	17.2365638	23.5464995	6.3099357	6.3099357
2020	3.0614200	3.0614200	7.4773373	10.5387573	5.4016867	8.4631067	17.2459362	23.5548569	6.3089207	6.3089207
2021	2.9881642	2.9881642	7.3092679	10.2974321	5.2591600	8.2473242	16.8583617	23.0352005	6.1768388	6.1768388
2022	2.9874030	2.9874030	7.3074427	10.2948457	5.2578400	8.2452430	16.8540532	23.0286072	6.1745540	6.1745540
2023	2.9856866	2.9856866	7.3031839	10.2888705	5.2548000	8.2404866	16.8443511	23.0163322	6.1719811	6.1719811
2024	2.9863582	2.9863582	7.3048063	10.2911645	5.2560000	8.2423582	16.8481543	23.0212855	6.1731312	6.1731312
2025	2.9822537	2.9822537	7.2948692	10.2771229	5.2487600	8.2310137	16.8250160	22.9907276	6.1657116	6.1657116
2026	2.9776418	2.9776418	7.2836139	10.2612557	5.2406800	8.2183218	16.7990372	22.9552170	6.1561798	6.1561798
2027	2.9757164	2.9757164	7.2788988	10.2546152	5.2372800	8.2129964	16.7881968	22.9413189	6.1531221	6.1531221
2028	2.9409104	2.9409104	7.1937234	10.1346338	5.1760000	8.1169104	16.5917553	22.6776352	6.0858799	6.0858799
2029	2.9407164	2.9407164	7.1932671	10.1339835	5.1756800	8.1163964	16.5907074	22.6768663	6.0861589	6.0861589
2030	2.9439851	2.9439851	7.2012269	10.1452120	5.1814000	8.1253851	16.6090798	22.7010310	6.0919512	6.0919512
2031	2.9377015	2.9377015	7.1859156	10.1236171	5.1703600	8.1080615	16.5737287	22.6485132	6.0747845	6.0747845
2032	2.9380597	2.9380597	7.1867775	10.1248372	5.1710000	8.1090597	16.5757287	22.6520454	6.0763167	6.0763167
2033	2.9390299	2.9390299	7.1891097	10.1281396	5.1726800	8.1117099	16.5811596	22.6592759	6.0781163	6.0781163
2034	2.9372836	2.9372836	7.1848509	10.1221345	5.1696400	8.1069236	16.5713617	22.6461382	6.0747765	6.0747765
2035	2.9464030	2.9464030	7.2071081	10.1535111	5.1856800	8.1320830	16.6227766	22.7175558	6.0947792	6.0947792

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)

Calendar Year	California Aqueduct (continued)									
	Reach 4 Dos Amigos Pumping Plant		Reach 14A Buena Vista Pumping Plant		Reach 15A Teerink Pumping Plant		Reach 16A Chrisman Pumping Plant		Reach 17E Edmonston Pumping Plant	
	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	0.4545898	2.0659924	0.9606230	3.0266154	1.0432294	4.0698448	1.9779157	6.0477605	7.0810192	13.1287797
1979	0.6587934	2.7952984	1.1099369	3.9052353	1.2652451	5.1704804	2.6939701	7.8644505	9.6345625	17.4990130
1980	0.8056952	2.1736228	1.3516057	3.5252285	1.5041463	5.0293748	3.1923433	8.2217181	10.9860288	19.2077469
1981	1.0909294	3.1846645	1.2388784	4.4235429	1.3195560	5.7430989	2.9541028	8.6972017	9.9484860	18.6456877
1982	0.8307526	2.5812833	1.2001820	3.7814653	1.3668611	5.1483264	2.8880977	8.0364241	10.1769284	18.2133525
1983	0.3789496	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	1.2978236	4.2570992	2.2564137	6.5135129	2.5746561	9.0881690	5.3763657	14.4645347	17.9738340	32.4383687
1988	1.2038035	3.9136941	2.1362050	6.0498991	2.4304101	8.4803092	5.0693228	13.5496320	16.8190471	30.3686791
1989	1.5234695	4.9736575	2.7054583	7.6791158	3.0205179	10.6996337	6.5778425	17.2774762	22.2785524	39.5560286
1990	1.8113444	5.8165396	3.3052648	9.1218044	3.7451498	12.8669542	8.6759487	21.5429029	31.0143365	52.5572394
1991	1.0494696	4.7471672	2.1208138	6.8679810	2.4173990	9.2853800	5.6820673	14.9674473	20.4700512	35.4374985
1992	0.8879141	3.1826780	1.4514049	4.6340829	1.6667954	6.3008783	3.4478542	9.7487325	11.6903038	21.4390363
1993	0.1688570	0.4149858	-0.0915889	0.3233969	-0.0699337	0.2534632	-0.6300117	-0.3765485	-3.0349105	-3.4114590
1994	1.4093606	4.6695785	2.4900869	7.1596654	2.7739835	9.9336489	6.0107497	15.9443986	21.2585826	37.2029812
1995	0.7652881	2.5041860	1.2014817	3.7056677	1.3173725	5.0230402	2.6976709	7.7207111	9.1724400	16.8931511
1996	1.2298673	3.7886148	2.1073871	5.8960019	2.5815604	8.4775623	4.8562810	13.3338433	16.0357900	29.3696333
1997	1.8089762	6.1581675	3.2054274	9.3635949	3.9011138	13.2647087	8.4420063	21.7067150	30.0933064	51.8000214
1998	1.7336127	5.9247803	3.0796255	9.0044058	3.7509540	12.7553598	8.1186154	20.8739752	28.9428541	49.8168293
1999	1.6980651	5.8659836	2.9884443	8.8544279	3.5831759	12.4376038	7.7340701	20.1716739	27.5349158	47.7065897
2000	2.1640435	7.3397602	3.7973608	11.1371210	4.5680604	15.7051814	9.8679222	25.5731036	35.1547428	60.7278464
2001	2.4467554	8.2523504	4.3929619	12.6453123	5.3567548	18.0020671	11.6058751	29.6079422	41.4385313	71.0464735
2002	2.5187229	8.4812370	4.5163669	12.9976039	5.5071829	18.5047868	11.9317162	30.4365030	42.6018001	73.0383031
2003	2.5522648	8.5884252	4.5762553	13.1646805	5.5801401	18.7448206	12.0896862	30.8345068	43.1657391	74.0002459
2004	2.5951653	8.7253560	4.6530247	13.3783807	5.6736877	19.0520684	12.2923820	31.3444504	43.8893863	75.2338367
2005	2.3710911	8.0128963	4.2359455	12.2488418	5.1624532	17.4112950	11.1826609	28.5939559	39.9225273	68.5164832
2006	2.3900096	8.0734686	4.2694888	12.3429574	5.2033427	17.5463001	11.2712007	28.8175008	40.2386247	69.0561255
2007	2.4179796	8.1629617	4.3191095	12.4820712	5.2637220	17.7457932	11.4019758	29.1477690	40.7053565	69.8531255
2008	2.4441904	8.2458466	4.3658849	12.6117315	5.3207706	17.9325021	11.5255644	29.4580665	41.1465306	70.6045971
2009	2.4709356	8.3312987	4.4137055	12.7450042	5.3790430	18.1240472	11.6517759	29.7758231	41.5972060	71.3730291
2010	2.4921113	8.4007881	4.4437989	12.8445870	5.4143996	18.2589866	11.7272888	29.9862754	41.8644103	71.8506857
2011	2.5157884	8.4759985	4.4862534	12.9622519	5.4661469	18.4283988	11.8394327	30.2678315	42.2648066	72.5326381
2012	2.5417528	8.5581278	4.5326310	13.0907588	5.5226374	18.6133962	11.9618616	30.5752578	42.7019504	73.2772082
2013	2.6150078	8.7913712	4.6634009	13.4547721	5.6820687	19.1368408	12.3071885	31.4440293	43.9347550	75.3787843
2014	2.6152793	8.7985702	4.6350744	13.4336446	5.6424216	19.0760662	12.2173152	31.2933814	43.6049961	74.8983775
2015	2.6710387	8.9706222	4.7618006	13.7324228	5.8016730	19.5340958	12.5660542	32.1001500	44.8584750	76.9586250
2016	2.6637246	8.9483459	4.7485855	13.6969314	5.7855469	19.4824783	12.5310171	32.0134954	44.7332146	76.7467100
2017	2.6684321	8.9629518	4.7572132	13.7201650	5.7960921	19.5162571	12.5539299	32.0701870	44.8150673	76.8852543
2018	2.6750667	8.9840587	4.7691051	13.7531638	5.8105480	19.5637118	12.5852654	32.1489772	44.9269782	77.0759554
2019	2.6754572	8.9853929	4.7698226	13.7552155	5.8114745	19.5666900	12.5872348	32.1539248	44.9340395	77.0879643
2020	2.6750203	8.9839410	4.7673884	13.7513294	5.8082151	19.5595445	12.5799893	32.1395338	44.9077253	77.0472591
2021	2.6144343	8.7912731	4.6590632	13.4503363	5.6761740	19.1265103	12.2939664	31.4204767	43.8864348	75.3069115
2022	2.6138416	8.7883956	4.6578824	13.4462780	5.6747152	19.1209932	12.2908368	31.4118300	43.8752845	75.2871145
2023	2.6123484	8.7843295	4.6554172	13.4397467	5.6717694	19.1115161	12.2843981	31.3959142	43.8524232	75.2483374
2024	2.6130372	8.7861684	4.6565594	13.4427278	5.6731524	19.1158802	12.2874288	31.4033090	43.8632032	75.2665122
2025	2.6093887	8.7751003	4.6501130	13.4252133	5.6652657	19.0904790	12.2703424	31.3608214	43.8022803	75.1631017
2026	2.6054503	8.7616301	4.6431039	13.4047340	5.6567929	19.0615269	12.2519447	31.3134716	43.7366066	75.0500782
2027	2.6037039	8.7568260	4.6399562	13.3967822	5.6528950	19.0496772	12.2435525	31.2932297	43.7065686	74.9997983
2028	2.5733321	8.6592120	4.5858725	13.2450845	5.5870515	18.8321360	12.1009043	30.9330403	43.1973906	74.1304309
2029	2.5731563	8.6593152	4.5855953	13.2449105	5.5866788	18.8315893	12.1001722	30.9317615	43.1947520	74.1265135
2030	2.5760853	8.6680365	4.5909282	13.2589647	5.5932169	18.8521816	12.1143417	30.9665233	43.2453502	74.2118735
2031	2.5682235	8.6430080	4.5751897	13.2181977	5.5737482	18.7919459	12.0718415	30.8637874	43.0930987	73.9568861
2032	2.5684742	8.6447909	4.5755530	13.2203439	5.5741417	18.7944856	12.0726962	30.8671818	43.0961546	73.9633364
2033	2.5693929	8.6475092	4.5772119	13.2247211	5.5761658	18.8008869	12.0770915	30.8779784	43.1118759	73.9898543
2034	2.5677849	8.6425614	4.5743348	13.2168962	5.5726473	18.7895435	12.0694742	30.8590177	43.0846270	73.9436447
2035	2.5759033	8.6706825	4.5887650	13.2594475	5.5902575	18.8497050	12.1076462	30.9573512	43.2209682	74.1783194

TABLE B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

	California Aqueduct (continued)									
	Reach 18A Alamo Powerplant		Reach 22B Pearblossom Pumping Plant		Reach 23 Mojave Siphon Powerplant		Reach 26A Devil Canyon Powerplant		Reach 29A Oso Pumping Plant	
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	13.1287797	4.1377503	17.2665300	0	17.2665300	-8.1314274	9.1351026	0.7314697	13.8602494
1979	0	17.4990130	5.1961178	22.6951308	0	22.6951308	-9.5825772	13.1125536	0.9504526	18.4494656
1980	0	19.2077469	4.3918283	23.5995752	0	23.5995752	-8.3797007	15.2198745	1.4269064	20.6346533
1981	0	18.6456877	3.9979411	22.6436288	0	22.6436288	-6.7421980	15.9014308	1.5649076	20.2105953
1982	0	18.2133525	3.6618080	21.8751605	0	21.8751605	-6.9205064	14.9546541	1.4942612	19.7076137
1983	0	10.1634506	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	-2.6107019	29.8276668	5.1909608	35.0186276	0	35.0186276	-30.5133657	4.5052619	3.1272921	35.5656608
1988	-1.4076158	28.9610633	4.8456180	33.8066813	0	33.8066813	-29.5512806	4.2554007	2.9971055	33.3657846
1989	-1.1019487	38.4540799	6.4423849	44.8964648	0	44.8964648	-28.3706997	16.5257651	3.5381171	43.0941457
1990	-1.0672075	51.4900319	8.9799647	60.4699966	0	60.4699966	-28.8762479	31.5937487	3.6781647	56.2354041
1991	-1.5203964	33.9171021	6.0765880	39.9936901	0	39.9936901	-30.3294625	9.6642276	2.1849463	37.6224448
1992	-2.6077437	18.8312926	3.6371431	22.4684357	0	22.4684357	-29.7202958	-7.2518601	1.8167497	23.2557860
1993	-0.1885849	-3.6000439	-1.0492676	-4.6493115	0	-4.6493115	-30.6629489	-35.3122604	0.2647680	-3.1466910
1994	-0.1281713	37.0748099	6.3870216	43.4618315	0	43.4618315	-30.4781656	12.9836659	3.0312376	40.2342188
1995	-3.4379011	13.4552500	3.3051441	16.7603941	0	16.7603941	-30.3516721	-13.5912780	1.2710225	18.1641736
1996	-4.2924693	25.0771640	4.4388528	29.5160168	0	29.5160168	-20.0600169	9.4559999	3.5848245	32.9544578
1997	-5.0763806	46.7236408	9.2862083	56.0098491	-3.4184617	52.5913874	-24.3620326	28.2293548	3.7330042	55.5330256
1998	-4.8115080	45.0053213	8.9603831	53.9657044	-5.8652817	48.1004227	-28.0281639	20.0722588	3.5795148	53.3963441
1999	-4.9572968	42.7492929	8.4562995	51.2055924	-5.2829701	45.9226223	-29.5916694	16.3309529	3.3930620	51.0996517
2000	-4.8896417	55.8382047	10.8330616	66.6712663	-5.1693035	61.5019628	-29.5819498	31.9200130	4.3073131	65.0351595
2001	-4.7894042	66.2570693	12.7439912	79.0010605	-5.4222312	73.5788293	-28.5863436	44.9924857	5.0939251	76.1403986
2002	-4.8077152	68.2305879	13.0973431	81.3279310	-5.4750753	75.8528557	-28.5474514	47.3054043	5.2385711	78.2768742
2003	-4.8167564	69.1834895	13.2647115	82.4482010	-5.4552204	76.9929806	-28.5110391	48.4819415	5.3097700	79.3100159
2004	-4.8109296	70.4229071	13.4848590	83.9077661	-5.3863329	78.5214332	-28.5342704	49.9871628	5.3995245	80.6333612
2005	-4.7060634	63.8104198	12.0924904	75.9029102	-5.3110504	70.5918598	-27.7117596	42.8801002	4.9714221	73.4879053
2006	-4.7008356	64.3552899	12.1863135	76.5416034	-5.3521173	71.1894861	-27.6731390	43.5163471	5.0113930	74.0675185
2007	-4.7037715	65.1493540	12.3232194	77.4725734	-5.1692221	72.3033513	-27.7412069	44.5621444	5.0710253	74.9241508
2008	-4.7064042	65.8981929	12.4591364	78.3573293	-5.1179254	73.2394039	-27.7540790	45.4853249	5.1255456	75.7301427
2009	-4.6681728	66.7048563	12.5948130	79.2996693	-5.1755496	74.1241197	-27.7325177	46.3916020	5.1813280	76.5543571
2010	-4.6139456	67.2367401	12.5888494	79.8255895	-5.1366072	74.6889823	-27.3597407	47.3292416	5.2451402	77.0958259
2011	-4.6556507	67.8769874	12.7124468	80.5894342	-5.2525654	75.3368688	-27.2995320	48.0373368	5.2946537	77.8272918
2012	-4.6623688	68.6148394	12.8485116	81.4633510	-5.2264529	76.2368981	-27.3201211	48.9167770	5.3489773	78.6261855
2013	-4.6587036	70.7200807	13.2209060	83.9409867	-5.2674200	78.6735667	-27.3051755	51.3683912	5.5026586	80.8814429
2014	-4.4494555	70.4489220	12.7846160	83.2335380	-5.0508016	78.1827364	-27.2847716	50.8979648	5.5761886	80.4745661
2015	-4.6547302	72.3038948	13.4835693	85.7874641	-5.2140095	80.5734546	-27.2498968	53.3235578	5.6243646	82.5829896
2016	-4.6440510	72.1026590	13.4389969	85.5416559	-5.0535311	80.4881248	-27.3166461	53.1714787	5.6093894	82.3560994
2017	-4.6493518	72.2359025	13.4675346	85.7034371	-5.2643640	80.4390731	-27.2287984	53.2102747	5.6189901	82.5042444
2018	-4.6542621	72.4216933	13.5026296	85.9243229	-5.2228328	80.7014901	-27.2411822	53.4603079	5.6328459	82.7088013
2019	-4.6486065	72.4393578	13.5032417	85.9425995	-5.2928229	80.6497766	-27.2119703	53.4378063	5.6335788	82.7215431
2020	-4.6452582	72.4020009	13.4804848	85.8824857	-5.2322305	80.6502552	-27.1548394	53.4954158	5.6366521	82.6839112
2021	-4.6378556	70.6690559	13.1685600	83.8376159	-5.0692308	78.7683851	-27.2101167	51.5582684	5.5099461	80.8168576
2022	-4.6388254	70.6482891	13.1651500	83.8134391	-5.1570438	78.6563953	-27.1759838	51.4804115	5.5085394	80.7956539
2023	-4.6386763	70.6096611	13.1595163	83.7691774	-5.1072575	78.6619199	-27.1909169	51.4710030	5.5053788	80.7537162
2024	-4.6402297	70.6262825	13.1642150	83.7904975	-5.1100718	78.6804257	-27.2037988	51.4766269	5.5065863	80.7730985
2025	-4.6026933	70.5604084	13.1430579	83.7034663	-5.1260405	78.5774258	-27.1781679	51.3992579	5.4990405	80.6621422
2026	-4.6406302	70.4094480	13.1266695	83.5361175	-5.1193368	78.4167807	-27.1984275	51.2183532	5.4905524	80.5406306
2027	-4.6005354	70.3992629	13.1139099	83.5131728	-5.1354098	78.3777630	-27.1784320	51.1993310	5.4870062	80.4868045
2028	-4.6415165	69.4889144	12.9644782	82.4533926	-5.1738270	77.2795656	-27.1677000	50.1118656	5.4228245	79.5532554
2029	-4.6064001	69.5201134	12.9627981	82.4829115	-5.1555029	77.3274086	-27.1691316	50.1582770	5.4224696	79.5489831
2030	-4.6079700	69.6039035	12.9814657	82.5853692	-5.2771789	77.3081903	-27.1286789	50.1795114	5.4284992	79.6403727
2031	-4.6219193	69.3349668	12.9130365	82.2480033	-5.0528912	77.1951121	-27.2028172	49.9922949	5.4169249	79.3738110
2032	-4.5888781	69.3744583	12.9119263	82.2863846	-5.1295300	77.1568546	-27.1845864	49.9722682	5.4175671	79.3809035
2033	-4.5886500	69.4012043	12.9174489	82.3186532	-5.1260687	77.1925845	-27.1855402	50.0070443	5.4193715	79.4092258
2034	-4.5935208	69.3501239	12.9081190	82.2582429	-5.1480258	77.1102171	-27.1647723	49.9454448	5.4161579	79.3598026
2035	-4.6085716	69.5697478	12.9635493	82.5332971	-5.1181412	77.4151559	-27.2187598	50.1963961	5.4329485	79.6112679

TABLE B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

	California Aqueduct (continued)							
	Reach 29G Warne Powerplant		Reach 29J Castaic Powerplant		Reach 31A Las Perillas and Badger Hill Pumping Plants		Reach 33A Devil's Den, Bluestone, and Polonio Pass PP 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	13.8602494	-9.0130187	4.8472307	1.9429506	4.0089430	0	0
1979	0	18.4494656	-19.0478097	-0.5983441	1.5600341	4.3553325	0	0
1980	0	20.6346533	-20.5438586	0.0907947	1.5124754	3.6860982	0	0
1981	0	20.2105953	-11.3026541	8.9079412	1.5414290	4.7260935	0	0
1982	-2.1714430	17.5361707	-9.5987314	7.9374393	1.7581649	4.3394482	0	0
1983	-9.1019731	2.5197607	-36.3842929	-33.8645322	0.1779482	1.3603593	0	0
1984	-15.0246012	1.7685917	-13.7320333	-11.9634416	0.8626279	2.7178601	0	0
1985	-14.7115359	8.3105626	-40.4781207	-32.1675581	1.2075223	3.7014237	0	0
1986	-14.1893653	25.4753348	-28.1596224	-2.6842876	2.2665598	6.9420198	0	0
1987	-14.8696165	20.6960443	-27.0536484	-6.3576041	1.9135072	6.1706064	0	0
1988	-14.7032843	18.6625003	-25.6857024	-7.0232021	1.7819524	5.6956465	0	0
1989	-14.4231503	28.6709954	-25.3986130	3.2723824	2.4279758	7.4016333	0	0
1990	-14.1850383	42.0503658	-26.0776141	15.9727517	3.5208739	9.3374135	0	0
1991	-14.7118666	22.9105782	-25.9200254	-3.0094472	2.4124332	7.1596004	0	0
1992	-13.6631326	9.5926534	-24.7746895	-15.1820361	0.7829974	3.9656754	0	0
1993	-11.3163585	-14.4630495	-22.2197351	-36.6827846	-0.5598445	-0.1448587	0	0
1994	-14.7724966	25.4617222	-26.7487933	-1.2870711	2.3369398	7.0065183	0	0
1995	-8.9621389	9.2020347	-22.8954000	-13.6933653	1.1890179	3.6932039	0	0
1996	-14.6526274	18.3018304	-28.1605112	-9.8586808	1.8900125	5.6786273	12.7908109	18.4694382
1997	-13.8887614	41.6442642	-26.0251234	15.6191408	2.5748113	8.7329788	27.8411434	36.5741222
1998	-13.9184856	39.4778585	-25.9200757	13.5577828	2.4833552	8.4081355	26.6698592	35.0779947
1999	-16.1165444	34.9831073	-26.1008256	8.8822817	3.6080139	9.4739975	25.4438553	34.9178528
2000	-15.4108013	49.6243582	-25.3762076	24.2481506	4.6312594	11.9710196	32.6446614	44.6156810
2001	-15.3034163	60.8369823	-24.9026503	35.9343320	4.6132264	12.8655768	26.1947621	39.0603389
2002	-15.2633470	63.0135272	-24.8867674	38.1267598	4.7442010	13.2254380	26.9384701	40.1639081
2003	-15.2705849	64.0394310	-24.8885589	39.1508721	4.8086952	13.3971204	27.3046421	40.7017625
2004	-15.2721926	65.3611686	-24.8891884	40.4719802	4.8899852	13.6153412	27.7662515	41.3815927
2005	-15.2643766	58.2235287	-24.8883451	33.3351836	4.5022882	12.5151845	25.5648214	38.0800059
2006	-15.2726646	58.7948539	-24.8887831	33.9060708	4.5384584	12.6119270	25.7702239	38.3821509
2007	-15.2695288	59.6546220	-24.8839952	34.7706268	4.5924523	12.7554140	26.0767670	38.8321810
2008	-15.2647033	60.4654394	-24.8845672	35.5808722	4.6418698	12.8877164	26.3573901	39.2451065
2009	-15.2626287	61.2917284	-24.8823196	36.4094088	4.6923501	13.0236488	26.6440428	39.6676916
2010	-15.2697075	61.8261184	-24.8848111	36.9413073	4.7501887	13.1509768	26.9724059	40.1233827
2011	-15.2684984	62.5587934	-24.8837831	37.6750103	4.7949891	13.2709876	27.2268252	40.4978128
2012	-15.2517000	63.3744855	-24.8836826	38.4908029	4.8442266	13.4023544	27.5064268	40.9087812
2013	-15.2638250	65.6176179	-24.8825876	40.7350303	4.9833668	13.7747380	28.2964844	42.0712224
2014	-15.2684625	65.2061036	-24.8838140	40.3222896	5.0499692	13.8485394	28.6746446	42.5231840
2015	-15.2709338	67.3120558	-24.8844976	42.4275582	5.0936081	14.0642303	28.9224385	42.9866688
2016	-15.2537866	67.1023128	-24.8828478	42.2194650	5.0800588	14.0284047	28.8455154	42.8739201
2017	-15.2725457	67.2316987	-24.8846745	42.3470242	5.0887296	14.0516814	28.8947592	42.9464406
2018	-15.2785890	67.4302123	-24.8864411	42.5437712	5.1012858	14.0853445	28.9660074	43.0513519
2019	-15.2670369	67.4545062	-24.8834584	42.5710478	5.1019247	14.0873176	28.9696677	43.0569853
2020	-15.2629819	67.4209293	-24.8834559	42.5374734	5.1047007	14.0886417	28.9854439	43.0740856
2021	-15.2626655	65.5541921	-24.8835271	40.6706650	4.9899818	13.7812549	28.3340380	42.1152929
2022	-15.2594467	65.5362072	-24.8833683	40.6528389	4.9887041	13.7770997	28.3268025	42.1039022
2023	-15.2609954	65.4927208	-24.8830050	40.6097158	4.9858351	13.7701646	28.3104730	42.0806376
2024	-15.2531939	65.5199046	-24.8827585	40.6371461	4.9869618	13.7731302	28.3168572	42.0899874
2025	-15.2598230	65.4023192	-24.8826932	40.5196260	4.9801087	13.7552090	28.2779985	42.0332075
2026	-15.2531546	65.2874760	-24.8827808	40.4046952	4.9724194	13.7340495	28.2343302	41.9683797
2027	-15.2597931	65.2270114	-24.8826529	40.3443585	4.9692135	13.7260395	28.2160855	41.9421250
2028	-15.2661185	64.2871369	-24.8841635	39.4029734	4.9110671	13.5702791	27.8859348	41.4562139
2029	-15.2492201	64.2997630	-24.8815132	39.4182498	4.9107535	13.5700687	27.8841898	41.4542585
2030	-15.2696331	64.3707396	-24.8847475	39.4859921	4.9161953	13.5842318	27.9150611	41.4992929
2031	-15.2655122	64.1082988	-24.8839849	39.2243139	4.9057299	13.5487379	27.8556735	41.4044114
2032	-15.2602540	64.1206495	-24.8833897	39.2372598	4.9063222	13.5511131	27.8590216	41.4101347
2033	-15.2629442	64.1462816	-24.8833330	39.2629486	4.9079310	13.5554402	27.8681298	41.4235700
2034	-15.2727698	64.0870328	-24.8850885	39.2019443	4.9050329	13.5475943	27.8516727	41.3992670
2035	-15.2940662	64.3172017	-24.8957858	39.4214159	4.9202490	13.5909315	27.9380728	41.5290043

TABLE B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	2,051	34,919	0	36,970	0	0	0
1963	0	0	0	7,900	49,811	0	57,711	0	0	0
1964	0	0	0	5,931	68,203	0	74,134	0	0	0
1965	0	0	0	10,918	68,765	62,926	142,609	0	0	0
1966	0	0	0	19,330	52,135	121,140	192,605	0	0	0
1967	0	0	0	18,789	50,635	153,693	223,117	0	0	0
1968	6,989	0	6,989	29,898	120,985	341,769	492,652	0	0	0
1969	8,551	0	8,551	31,859	3,904	298,968	334,731	0	0	0
1970	13,598	0	13,598	49,688	0	431,442	481,130	0	0	0
1971	10,609	0	10,609	23,842	28,329	416,328	468,499	0	0	0
1972	14,434	0	14,434	54,839	144,669	524,207	723,715	0	0	0
1973	14,449	0	14,449	18,397	15,590	547,808	581,795	0	0	0
1974	17,473	0	17,473	9,499	29	636,187	645,715	0	0	0
1975	14,779	0	14,779	22,317	4,765	425,285	452,367	0	0	0
1976	20,856	0	20,856	97,875	121,693	502,768	722,336	0	0	0
1977	22,635	0	22,635	82,578	123,044	497,792	703,414	0	0	0
1978	21,692	0	21,692	74,911	39,986	652,861	767,758	0	0	0
1979	16,237	0	16,237	136,993	77,085	652,117	866,195	0	0	0
1980	19,945	0	19,945	98,836	64,953	518,020	681,809	0	0	0
1981	23,841	0	23,841	126,888	141,961	569,996	838,845	0	0	0
1982	12,159	0	12,159	88,298	42,497	587,133	717,928	0	0	0
1983	2,335	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	222,770	241,403	837,289	1,301,462	0	0	0
1988	31,383	31,659	63,042	230,933	298,889	784,163	1,313,985	0	0	0
1989	17,043	66,384	83,427	290,247	288,105	995,678	1,574,030	0	0	0
1990	58,772	111,494	170,266	527,490	505,810	1,465,436	2,498,736	0	0	0
1991	7,713	19,404	27,117	105,763	142,141	316,918	564,822	0	(3,732)	(3,732)
1992	12,422	23,726	36,148	93,849	122,537	274,074	490,460	0	0	0
1993	(9,581)	(31,041)	(40,622)	(37,343)	(13,156)	(79,501)	(130,000)	0	0	0
1994	41,119	84,709	125,828	233,033	259,469	646,831	1,139,333	0	0	0
1995	15,406	36,034	51,440	152,846	84,288	145,216	382,350	0	0	0
1996	50,031	84,501	134,532	168,073	418,368	352,698	939,139	16,105	71,125	87,230
1997	109,756	194,783	304,539	722,088	659,298	1,569,756	2,951,142	172,996	1,572,175	1,745,171
1998	110,378	186,919	297,297	691,992	631,819	1,504,331	2,828,142	165,918	1,507,864	1,673,782
1999	97,738	164,292	262,030	664,411	606,637	1,444,374	2,715,422	165,161	1,500,979	1,666,140
2000	131,776	182,808	314,584	843,746	770,377	1,834,231	3,448,354	211,032	1,873,235	2,084,267
2001	166,763	252,659	419,422	983,991	898,427	2,139,114	4,021,532	976,509	1,776,698	2,753,207
2002	172,908	265,050	437,958	1,011,565	923,603	2,199,052	4,134,220	1,004,098	1,826,896	2,830,994
2003	176,934	273,735	450,669	1,024,974	935,846	2,228,205	4,189,025	1,017,544	1,851,360	2,868,904
2004	181,539	283,157	464,696	1,041,933	951,330	2,265,073	4,258,336	1,034,540	1,882,284	2,916,824
2005	168,875	260,437	429,312	959,217	875,807	2,085,253	3,920,277	952,000	1,732,106	2,684,106
2006	170,914	260,812	431,726	966,753	882,688	2,101,638	3,951,079	959,553	1,745,850	2,705,403
2007	174,188	262,857	437,045	977,974	892,933	2,126,032	3,996,939	970,804	1,766,320	2,737,124
2008	177,527	264,443	441,970	988,261	902,326	2,148,396	4,038,983	981,128	1,785,102	2,766,230
2009	180,690	266,312	447,002	998,808	911,954	2,171,320	4,082,082	991,692	1,804,324	2,796,016
2010	184,145	268,595	452,740	1,010,017	922,189	2,195,691	4,127,897	1,003,085	1,825,052	2,828,137
2011	187,314	269,926	457,240	1,019,351	930,712	2,215,980	4,166,043	1,012,446	1,842,083	2,854,529
2012	190,444	271,721	462,165	1,029,586	940,058	2,238,232	4,207,876	1,022,720	1,860,776	2,883,496
2013	197,351	278,328	475,679	1,058,570	966,520	2,301,238	4,326,328	1,051,780	1,913,651	2,965,431
2014	201,418	280,860	482,278	1,069,238	976,261	2,324,432	4,369,931	1,063,079	1,934,210	2,997,289
2015	204,573	282,116	486,689	1,081,370	987,338	2,350,804	4,419,512	1,074,667	1,955,292	3,029,959
2016	204,947	279,488	484,435	1,078,576	984,787	2,344,730	4,408,093	1,071,848	1,950,163	3,022,011
2017	206,524	278,741	485,265	1,080,379	986,433	2,348,650	4,415,462	1,073,661	1,953,462	3,027,123
2018	208,241	278,224	486,465	1,082,996	988,823	2,354,338	4,426,157	1,076,284	1,958,234	3,034,518
2019	209,453	277,075	486,528	1,083,139	988,953	2,354,650	4,426,742	1,076,424	1,958,490	3,034,914
2020	210,731	276,063	486,794	1,083,523	989,304	2,355,486	4,428,313	1,076,853	1,959,268	3,036,121
2021	206,183	269,671	475,854	1,059,620	967,478	2,303,520	4,330,618	1,052,883	1,915,656	2,968,539
2022	206,131	269,603	475,734	1,059,315	967,201	2,302,861	4,329,377	1,052,598	1,915,138	2,967,736
2023	206,012	269,447	475,459	1,058,751	966,686	2,301,633	4,327,070	1,052,017	1,914,080	2,966,097
2024	206,059	269,507	475,566	1,058,979	966,894	2,302,129	4,328,002	1,052,249	1,914,506	2,966,755
2025	205,775	269,139	474,914	1,057,574	965,611	2,299,072	4,322,257	1,050,831	1,911,923	2,962,754
2026	205,458	268,723	474,181	1,055,940	964,120	2,295,521	4,315,581	1,049,208	1,908,974	2,958,182
2027	205,325	268,549	473,874	1,055,301	963,535	2,294,132	4,312,968	1,048,553	1,907,780	2,956,333
2028	202,923	265,407	468,330	1,043,171	952,461	2,267,763	4,263,395	1,036,405	1,885,678	2,922,083
2029	202,910	265,390	468,300	1,043,136	952,429	2,267,686	4,263,251	1,036,357	1,885,589	2,921,946
2030	203,135	265,684	468,819	1,044,248	953,443	2,270,103	4,267,794	1,037,483	1,887,636	2,925,119
2031	202,702	265,118	467,820	1,041,832	951,238	2,264,850	4,257,920	1,035,111	1,883,321	2,918,432
2032	202,726	265,151	467,877	1,041,995	951,386	2,265,204	4,258,585	1,035,254	1,883,581	2,918,835
2033	202,793	265,237	468,030	1,042,326	951,690	2,265,928	4,259,944	1,035,589	1,884,192	2,919,781
2034	202,673	265,080	467,753	1,041,723	951,138	2,264,614	4,257,475	1,034,982	1,883,086	2,918,068
2035	203,302	265,902	469,204	1,045,008	954,138	2,271,755	4,270,901	1,038,225	1,888,988	2,927,213
TOTAL	7,811,870	10,593,879	18,405,749	42,531,676	39,741,515	101,065,676	183,338,867	36,869,672	72,273,395	109,143,067

TABLE B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	68,978	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	108,944	938	0	190,675	1,616,974	4,319	6,294	24,901	1,953,045
1979	107,742	4,861	0	193,697	2,367,376	5,591	13,137	433,610	3,126,014
1980	89,119	1,943	0	122,020	1,736,941	4,782	7,797	150,511	2,113,113
1981	130,571	18,659	0	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	197,366	10,833	0	530,370	4,425,983	17,028	16,741	396,268	5,594,589
1988	189,686	16,178	0	523,486	4,290,999	15,655	12,028	377,558	5,425,590
1989	282,839	15,324	0	676,153	6,119,803	19,895	21,254	644,203	7,779,471
1990	211,118	7,440	0	817,333	4,625,485	11,633	11,703	331,949	6,016,661
1991	4,401	1,049	0	185,314	47,945	0	521	10,349	249,579
1992	75,653	4,341	0	221,269	1,636,773	6,401	5,138	148,720	2,098,295
1993	21,006	4,759	0	76,023	381,175	5,004	1,534	118,198	607,699
1994	134,451	8,176	0	482,606	3,387,321	10,732	10,012	291,205	4,324,503
1995	161,044	4,084	0	338,949	2,961,613	12,368	8,988	246,335	3,733,381
1996	189,146	7,077	0	544,455	4,500,758	15,154	14,585	984,687	6,255,862
1997	328,661	18,475	0	773,902	6,426,782	24,633	24,790	729,743	8,326,986
1998	316,206	17,775	0	744,548	6,182,893	23,699	23,890	702,086	8,011,097
1999	313,068	17,598	0	736,021	6,204,132	23,464	23,757	695,119	8,013,159
2000	391,723	22,019	0	921,720	7,789,085	29,359	29,502	869,761	10,053,169
2001	476,161	24,757	0	1,197,567	10,097,463	33,009	33,092	977,904	12,839,953
2002	489,367	25,444	0	1,230,813	10,378,244	33,925	33,986	1,005,027	13,196,806
2003	495,552	25,765	0	1,246,423	10,510,620	34,354	34,406	1,017,728	13,364,848
2004	503,453	26,176	0	1,266,369	10,679,713	34,902	34,942	1,033,955	13,579,510
2005	462,344	24,038	0	1,162,191	9,797,584	32,051	32,158	949,528	12,459,894
2006	465,840	24,220	0	1,171,007	9,872,282	32,294	32,396	956,706	12,554,745
2007	471,002	24,489	0	1,184,032	9,982,700	32,652	32,746	967,311	12,694,932
2008	475,786	24,738	0	1,196,112	10,085,164	32,984	33,069	977,133	12,824,986
2009	480,716	24,994	0	1,208,557	10,190,637	33,325	33,404	987,259	12,958,892
2010	484,726	25,202	0	1,218,484	10,275,193	33,603	33,679	995,493	13,066,380
2011	489,065	25,428	0	1,229,446	10,368,167	33,904	33,973	1,004,406	13,184,389
2012	493,804	25,674	0	1,241,416	10,469,724	34,233	34,293	1,014,138	13,313,282
2013	507,262	26,374	0	1,275,395	10,757,816	35,165	35,205	1,041,777	13,678,994
2014	507,678	26,396	0	1,275,726	10,762,250	35,194	35,245	1,042,631	13,685,120
2015	517,605	26,912	0	1,301,461	10,978,863	35,882	35,908	1,063,019	13,959,650
2016	516,320	26,845	0	1,298,200	10,951,111	35,793	35,822	1,060,379	13,924,470
2017	517,163	26,889	0	1,300,337	10,969,281	35,852	35,879	1,062,110	13,947,511
2018	518,380	26,952	0	1,303,413	10,995,359	35,936	35,961	1,064,611	13,980,612
2019	518,457	26,956	0	1,303,607	10,996,989	35,942	35,967	1,064,769	13,982,687
2020	518,374	26,952	0	1,303,360	10,995,015	35,936	35,961	1,064,597	13,980,195
2021	507,257	26,374	0	1,275,287	10,756,973	35,165	35,208	1,041,765	13,678,029
2022	507,091	26,366	0	1,274,875	10,753,584	35,153	35,195	1,041,425	13,673,689
2023	506,856	26,353	0	1,274,280	10,748,472	35,137	35,180	1,040,943	13,667,221
2024	506,962	26,358	0	1,274,550	10,750,778	35,145	35,187	1,041,161	13,670,141
2025	506,324	26,325	0	1,272,934	10,737,011	35,101	35,145	1,039,850	13,652,690
2026	505,546	26,285	0	1,270,983	10,720,570	35,047	35,090	1,038,253	13,631,774
2027	505,269	26,270	0	1,270,273	10,714,469	35,027	35,073	1,037,684	13,624,065
2028	499,636	25,978	0	1,256,068	10,594,103	34,637	34,690	1,026,117	13,471,229
2029	499,642	25,977	0	1,256,075	10,594,099	34,638	34,691	1,026,129	13,471,251
2030	500,146	26,004	0	1,257,355	10,605,024	34,672	34,724	1,027,162	13,485,087
2031	498,701	25,929	0	1,253,670	10,573,976	34,572	34,626	1,024,196	13,445,670
2032	498,804	25,934	0	1,253,917	10,575,947	34,579	34,635	1,024,408	13,448,224
2033	498,961	25,942	0	1,254,315	10,579,342	34,590	34,645	1,024,730	13,452,525
2034	498,676	25,927	0	1,253,592	10,573,205	34,570	34,626	1,024,144	13,444,740
2035	500,299	26,012	0	1,257,663	10,607,413	34,683	34,740	1,027,476	13,488,286
TOTAL	21,858,734	1,157,129	0	53,471,386	456,752,690	1,511,338	1,540,266	45,063,839	581,355,382

TABLE B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	30,401	0	0	0	0	0	0	0	0
1969	0	30,627	0	0	0	0	0	0	0	0
1970	0	39,429	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	581,728	45,550	174,115	20,875	264,178	2,731	0	0	37,042	70,989
1979	1,058,567	83,834	228,381	28,596	340,428	2,327	90,780	0	236	3,803
1980	1,390,776	51,281	256,858	29,240	401,192	3,668	94,398	0	0	16,513
1981	1,480,002	111,339	274,101	33,627	430,230	23,855	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	(99,770)	275,966	19,741	437,539	15	0	0	(65,520)	(90,282)
1985	821,689	(353,871)	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	1,036,262	(28,458)	680,447	64,751	1,103,087	33,027	595	160,442	39,427	47,892
1988	1,031,486	(66,449)	698,177	67,815	1,149,427	12,133	304	51,263	53,774	38,078
1989	1,741,775	180,514	982,020	97,426	1,638,721	38,373	8,980	351,923	343,439	212,174
1990	2,430,728	413,752	1,396,857	110,477	2,303,907	90,030	0	444,198	594,941	526,003
1991	286,620	(6,448)	277,157	34,074	457,128	17,704	128,447	132,753	35,380	52,176
1992	569,930	(200,460)	234,279	11,661	386,390	4,725	235,334	75,984	(24,351)	(57,346)
1993	(155,166)	(501,742)	(792,036)	(2,042)	(1,306,393)	1,744	(51,944)	(27,942)	(153,996)	(508,390)
1994	1,822,337	64,597	184,765	34,117	304,694	40,789	723,484	312,096	118,605	197,742
1995	636,244	(205,805)	(313,960)	6,889	(427,687)	9,153	142,129	93,661	(9,460)	(175,627)
1996	1,475,089	18,882	588,344	122,492	970,393	57,677	424,277	294,230	255,311	151,296
1997	2,828,696	565,424	652,097	276,105	1,075,539	107,465	2,663,534	808,319	1,806,677	225,835
1998	2,859,998	528,430	463,668	252,528	764,754	103,513	2,439,224	778,592	1,124,045	180,652
1999	2,900,497	414,324	377,244	190,579	622,209	98,322	2,328,483	739,563	947,195	146,979
2000	3,983,105	1,003,141	737,352	119,929	1,216,154	128,428	3,116,470	966,000	1,883,281	287,279
2001	9,169,978	1,654,667	1,039,325	426,755	1,714,213	152,393	3,737,803	1,146,248	2,699,549	1,295,784
2002	9,443,113	1,750,223	1,092,756	439,948	1,802,337	156,931	3,853,324	1,180,389	2,838,324	1,362,394
2003	9,574,995	1,794,906	1,119,932	446,559	1,847,162	159,120	3,911,244	1,196,874	2,908,917	1,396,279
2004	9,746,530	1,852,502	1,154,703	455,424	1,904,512	161,972	3,988,889	1,218,315	2,999,229	1,439,630
2005	8,831,363	1,542,353	990,530	409,431	1,633,732	146,765	3,586,067	1,103,920	3,859,207	1,234,947
2006	8,906,772	1,567,275	1,005,227	412,899	1,657,973	148,018	3,616,426	1,113,347	3,916,470	1,253,271
2007	9,016,670	1,604,975	1,029,385	419,360	1,697,818	149,843	3,673,010	1,127,084	4,010,593	1,283,388
2008	9,120,310	1,640,280	1,050,712	424,788	1,732,991	151,567	3,720,562	1,140,038	4,093,680	1,309,978
2009	9,231,952	1,676,392	1,071,646	429,919	1,767,522	153,422	3,765,505	1,153,994	4,175,244	1,336,078
2010	9,305,565	1,700,080	1,093,305	433,196	1,803,245	154,645	3,794,200	1,163,196	4,855,980	1,363,082
2011	9,394,174	1,732,053	1,109,663	436,954	1,830,222	156,116	3,827,113	1,174,271	4,928,632	1,383,474
2012	9,496,294	1,767,578	1,129,977	442,173	1,863,728	157,814	3,872,835	1,187,037	5,018,862	1,408,804
2013	9,787,659	1,865,442	1,186,611	456,308	1,957,136	162,658	3,996,617	1,223,457	5,270,398	1,479,409
2014	9,750,129	1,849,252	1,175,743	453,459	1,939,211	162,033	3,971,683	1,218,766	5,222,133	1,465,863
2015	10,006,859	1,939,358	1,231,774	467,327	2,031,629	166,298	4,093,132	1,250,858	5,470,999	1,535,719
2016	9,979,008	1,930,268	1,228,259	466,833	2,025,833	165,837	4,088,797	1,247,377	5,455,393	1,531,338
2017	9,997,449	1,935,857	1,229,158	466,547	2,027,312	166,142	4,086,304	1,249,681	5,459,374	1,532,456
2018	10,023,162	1,944,453	1,234,935	468,068	2,036,839	166,570	4,099,635	1,252,896	5,485,028	1,539,657
2019	10,025,606	1,945,609	1,234,413	467,770	2,035,981	166,611	4,097,010	1,253,201	5,482,718	1,539,007
2020	10,020,438	1,944,233	1,235,744	467,773	2,038,175	166,526	4,097,032	1,252,555	5,488,630	1,540,670
2021	9,780,597	1,862,855	1,190,997	456,857	1,964,370	162,539	4,001,433	1,222,575	5,289,878	1,484,879
2022	9,777,724	1,862,061	1,189,197	456,207	1,961,404	162,491	3,995,745	1,222,214	5,281,890	1,482,636
2023	9,772,377	1,860,184	1,188,981	456,239	1,961,043	162,402	3,996,024	1,221,548	5,280,925	1,482,366
2024	9,774,676	1,861,360	1,189,110	456,347	1,961,259	162,439	3,996,964	1,221,835	5,281,501	1,482,526
2025	9,765,560	1,856,256	1,187,324	455,749	1,958,313	162,289	3,991,732	1,220,694	5,273,564	1,480,298
2026	9,744,667	1,851,219	1,183,144	454,817	1,951,419	161,942	3,983,574	1,218,084	5,255,002	1,475,088
2027	9,743,259	1,848,612	1,182,705	454,592	1,950,694	161,919	3,981,591	1,217,907	5,253,051	1,474,541
2028	9,617,266	1,807,567	1,157,585	448,221	1,909,263	159,826	3,925,801	1,202,160	5,141,476	1,443,221
2029	9,621,583	1,808,195	1,158,656	448,499	1,911,030	159,895	3,928,231	1,202,699	5,146,239	1,444,559
2030	9,633,179	1,811,190	1,159,147	448,387	1,911,838	160,088	3,927,255	1,204,148	5,148,416	1,445,169
2031	9,595,959	1,799,878	1,154,824	447,733	1,904,707	159,471	3,921,511	1,199,496	5,129,210	1,439,778
2032	9,601,425	1,800,443	1,154,359	447,511	1,903,944	159,562	3,919,568	1,200,178	5,127,154	1,439,201
2033	9,605,126	1,801,567	1,155,162	447,717	1,905,268	159,623	3,921,382	1,200,640	5,130,724	1,440,204
2034	9,598,056	1,798,936	1,153,741	447,239	1,902,921	159,506	3,917,197	1,199,758	5,124,404	1,438,430
2035	9,628,453	1,808,594	1,159,536	449,008	1,912,482	160,011	3,932,689	1,203,557	5,150,150	1,445,656
TOTAL	368,424,319	65,306,938	49,639,468	17,402,155	81,703,112	6,396,713	149,886,084	47,330,057	175,996,110	51,979,022

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	223,117
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	3,696,430	0	4,893,638	0	0	0	0	0	7,636,133
1979	0	4,019,308	0	5,856,260	0	0	0	0	0	9,864,706
1980	0	5,367,081	0	7,611,007	0	0	0	0	0	10,425,874
1981	0	10,504,656	0	13,260,691	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	(6,634,835)	0	(5,667,046)	0	0	0	0	0	(2,920,267)
1985	0	(15,800,812)	0	(14,274,408)	0	0	0	0	0	(10,368,401)
1986	0	1,167,681	0	4,567,856	0	0	0	0	0	11,645,112
1987	0	(2,877,334)	0	260,138	0	0	0	0	0	7,183,411
1988	0	(3,281,208)	0	(245,200)	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	30,410,637	203,356	38,924,886	0	0	0	0	0	47,610,549
1991	0	(41,531)	22,635	1,396,095	0	0	0	0	0	2,233,881
1992	0	(9,309,495)	0	(8,073,349)	0	0	0	0	0	(5,448,446)
1993	0	(21,843,509)	0	(25,341,416)	0	0	0	0	0	(24,904,339)
1994	0	3,697,617	0	7,500,843	0	0	0	0	0	13,090,507
1995	0	(5,135,869)	0	(5,380,332)	0	0	0	0	0	(1,213,161)
1996	0	(48,658)	0	4,309,333	0	0	0	0	0	11,726,096
1997	0	14,572,564	286,316	25,868,571	0	0	0	0	0	39,196,409
1998	40,144	15,176,983	265,179	24,977,710	0	0	0	0	0	37,788,028
1999	48,993	13,752,367	219,328	22,786,083	0	0	0	0	0	35,442,834
2000	127,679	40,505,533	369,362	54,443,713	0	0	0	0	0	70,344,087
2001	179,970	80,466,861	843,201	104,526,747	0	0	0	0	0	124,560,861
2002	236,529	84,985,800	886,967	110,029,035	0	0	0	0	0	130,629,013
2003	290,892	87,183,537	907,460	112,737,877	0	0	0	0	0	133,611,323
2004	324,917	90,007,309	933,885	116,187,817	0	0	0	0	0	137,407,183
2005	300,163	75,678,510	791,145	100,108,133	0	0	0	0	0	119,601,722
2006	326,372	76,885,905	802,565	101,612,520	0	0	0	0	0	121,255,473
2007	376,549	78,788,735	819,833	103,997,243	0	0	0	0	0	123,863,283
2008	384,352	80,520,583	836,040	106,125,881	0	0	0	0	0	126,198,050
2009	392,009	82,257,436	852,600	108,263,719	0	0	0	0	0	128,547,711
2010	499,325	83,693,977	863,251	110,723,047	0	0	0	0	0	131,198,201
2011	506,794	85,146,686	877,919	112,504,071	0	0	0	0	0	133,166,272
2012	516,073	86,845,160	894,236	114,600,571	0	0	0	0	0	135,467,390
2013	541,938	91,546,818	939,112	120,413,563	0	0	0	0	0	141,859,995
2014	536,975	90,664,462	930,865	119,340,574	0	0	0	0	0	140,875,192
2015	722,533	95,188,654	972,974	125,078,114	0	0	0	0	0	146,973,924
2016	720,472	94,820,697	968,802	124,628,914	0	0	0	0	0	146,467,923
2017	720,999	94,997,070	971,364	124,839,713	0	0	0	0	0	146,715,074
2018	724,388	95,440,973	975,307	125,391,911	0	0	0	0	0	147,319,663
2019	724,081	95,450,866	975,838	125,398,711	0	0	0	0	0	147,329,582
2020	890,699	95,465,716	975,166	125,583,357	0	0	0	0	0	147,514,780
2021	891,958	91,647,079	937,831	120,893,848	0	0	0	0	0	142,346,888
2022	890,609	91,556,983	937,474	120,776,635	0	0	0	0	0	142,223,171
2023	890,449	91,500,704	936,609	120,709,851	0	0	0	0	0	142,145,698
2024	890,546	91,536,179	937,158	120,751,900	0	0	0	0	0	142,192,364
2025	889,206	91,336,060	934,807	120,511,852	0	0	0	0	0	141,924,467
2026	886,077	91,045,264	932,508	120,142,805	0	0	0	0	0	141,522,523
2027	885,748	90,961,228	931,299	120,047,146	0	0	0	0	0	141,414,386
2028	866,937	88,935,629	912,481	117,527,433	0	0	0	0	0	138,652,470
2029	867,739	88,994,500	912,772	117,604,597	0	0	0	0	0	138,729,345
2030	868,106	89,088,742	914,144	117,719,809	0	0	0	0	0	138,866,628
2031	864,868	88,629,651	908,906	117,155,992	0	0	0	0	0	138,245,834
2032	864,520	88,625,904	909,161	117,152,930	0	0	0	0	0	138,246,451
2033	865,121	88,685,791	909,675	117,228,000	0	0	0	0	0	138,328,280
2034	864,056	88,562,535	908,466	117,075,245	0	0	0	0	0	138,163,281
2035	868,397	89,032,452	912,907	117,663,892	0	0	0	0	0	138,819,496
TOTAL	23,287,183	3,195,286,533	33,220,904	4,265,858,598	0	0	0	0	0	5,158,101,663

TABLE B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	11,750	43,787	0	55,537	0	0	0
1963	0	0	0	151,140	190,453	449,448	791,041	0	0	0
1964	0	0	0	170,797	277,738	623,343	1,071,878	6,064	20,521	26,585
1965	0	0	0	245,718	404,749	1,160,661	1,811,128	11,435	31,771	43,206
1966	18,096	0	18,096	271,833	422,196	1,415,802	2,109,831	20,198	49,707	69,905
1967	41,644	0	41,644	346,510	495,811	1,679,566	2,521,887	38,006	84,262	122,268
1968	128,824	0	128,824	392,186	604,069	1,988,444	2,984,699	63,565	133,233	196,798
1969	254,981	0	254,981	447,140	539,983	2,086,637	3,073,760	118,200	235,433	353,633
1970	277,819	0	277,819	460,871	533,235	2,206,210	3,200,316	130,918	260,050	390,968
1971	227,749	0	227,749	421,783	552,785	2,173,353	3,147,921	131,734	262,620	394,354
1972	225,255	0	225,255	509,334	679,192	2,323,883	3,512,409	137,493	274,669	412,162
1973	221,370	31,433	252,803	473,850	550,066	2,342,090	3,366,006	134,288	269,504	403,792
1974	240,782	33,008	273,790	497,183	565,268	2,509,832	3,572,283	135,296	272,061	407,357
1975	237,756	36,366	274,122	545,545	606,407	2,413,402	3,565,354	151,619	302,951	454,570
1976	271,596	40,918	312,514	635,843	735,490	2,503,988	3,875,321	260,819	506,160	766,979
1977	293,936	45,185	339,121	599,088	714,239	2,479,891	3,793,218	270,548	527,595	798,143
1978	274,184	49,273	323,457	653,210	693,271	2,789,490	4,135,971	277,188	543,157	820,345
1979	289,799	53,442	343,241	716,611	736,986	2,816,583	4,270,180	274,968	542,344	817,312
1980	311,182	67,873	379,055	833,370	867,133	3,032,233	4,732,736	300,536	593,764	894,300
1981	347,576	87,563	435,139	795,671	880,164	2,922,203	4,598,038	319,265	642,207	961,472
1982	438,710	107,105	545,815	828,090	849,593	3,208,441	4,886,124	320,723	639,450	960,173
1983	355,203	151,516	506,719	846,561	902,312	3,833,780	5,582,653	349,863	689,826	1,039,689
1984	467,862	224,617	692,479	1,133,011	1,098,257	5,745,484	7,976,752	382,273	752,212	1,134,485
1985	736,846	364,899	1,101,745	1,582,994	1,794,170	6,565,540	9,942,704	429,732	841,924	1,271,656
1986	1,085,917	693,593	1,779,510	1,407,570	1,532,210	6,881,128	9,820,908	417,820	822,335	1,240,155
1987	1,774,406	1,561,716	3,336,122	1,895,980	2,015,643	6,693,894	10,605,517	416,850	870,671	1,287,521
1988	2,233,946	2,357,265	4,591,211	1,896,042	2,213,750	6,378,906	10,488,698	450,673	1,035,149	1,485,822
1989	2,375,539	3,321,855	5,697,394	1,789,635	1,855,320	5,861,415	9,506,370	443,841	1,217,666	1,661,507
1990	2,747,120	3,437,015	6,184,135	2,221,631	2,260,438	6,668,244	11,150,313	515,339	1,285,971	1,801,310
1991	2,746,764	3,539,149	6,285,913	1,394,365	1,618,319	4,522,686	7,535,370	521,946	1,532,076	2,054,022
1992	2,556,213	3,536,690	6,092,903	1,853,806	2,153,272	5,749,293	9,756,371	582,805	1,550,161	2,132,966
1993	2,562,545	3,454,666	6,017,211	2,528,599	2,032,709	6,564,837	11,126,145	642,645	1,735,637	2,378,282
1994	2,687,593	3,531,552	6,219,145	2,544,802	2,652,807	7,334,530	12,532,139	818,567	2,580,530	3,399,097
1995	2,650,286	3,519,754	6,170,040	2,607,388	2,207,433	5,797,078	10,611,899	1,077,225	5,269,395	6,346,620
1996	2,921,106	4,278,799	7,199,905	2,118,472	2,834,181	6,066,533	11,019,186	2,010,195	13,662,336	15,672,531
1997	3,015,989	4,457,594	7,473,583	3,427,974	3,317,439	8,793,146	15,538,559	3,434,545	27,032,812	30,467,357
1998	2,997,795	4,428,190	7,425,985	3,269,440	3,176,151	8,487,201	14,932,792	3,453,765	27,171,671	30,625,436
1999	3,010,867	4,440,959	7,451,826	3,187,320	3,103,205	8,326,029	14,616,554	3,441,800	27,014,810	30,456,610
2000	3,021,332	4,360,583	7,381,915	3,191,508	3,107,042	8,335,260	14,633,810	3,443,292	26,927,267	30,370,559
2001	3,028,168	4,312,874	7,341,042	3,156,707	3,075,279	8,259,688	14,491,674	4,750,202	26,508,907	31,259,109
2002	3,030,873	4,316,722	7,347,595	3,148,884	3,068,140	8,242,695	14,459,719	4,726,557	26,469,870	31,196,427
2003	3,027,309	4,310,035	7,337,344	3,107,912	3,030,732	8,153,638	14,292,282	4,660,497	26,349,686	31,010,183
2004	3,037,497	4,324,616	7,362,113	3,133,395	3,054,000	8,209,046	14,396,441	4,689,975	26,403,322	31,093,297
2005	3,033,712	4,309,010	7,342,722	3,074,908	3,000,593	8,081,845	14,157,346	4,642,973	26,317,788	30,960,761
2006	3,038,730	4,309,645	7,348,375	3,082,642	3,007,655	8,098,663	14,188,960	4,650,814	26,332,054	30,982,868
2007	3,045,556	4,311,871	7,357,427	3,093,681	3,017,735	8,122,673	14,234,089	4,661,793	26,352,033	31,013,826
2008	3,075,169	4,342,310	7,417,479	3,189,129	3,104,883	8,330,173	14,624,185	4,796,899	26,597,847	31,394,746
2009	3,082,562	4,344,374	7,426,936	3,199,507	3,114,358	8,352,736	14,666,601	4,807,208	26,616,609	31,423,817
2010	3,089,501	4,345,954	7,435,455	3,207,821	3,121,951	8,370,823	14,700,595	4,814,354	26,629,612	31,443,966
2011	3,097,691	4,347,538	7,445,229	3,217,233	3,130,542	8,391,280	14,739,055	4,823,840	26,646,873	31,470,713
2012	3,105,473	4,350,048	7,455,521	3,228,855	3,141,155	8,416,558	14,786,568	4,836,141	26,669,257	31,505,398
2013	3,030,875	4,260,500	7,291,375	2,860,012	2,800,000	7,489,772	13,149,784	4,445,091	25,957,774	30,402,865
2014	2,996,749	4,219,436	7,216,185	2,705,408	2,625,740	7,065,022	12,396,170	4,259,912	25,611,365	29,871,277
2015	2,981,640	4,200,553	7,182,193	2,619,449	2,492,798	6,590,853	11,703,100	4,178,081	25,461,006	29,639,087
2016	2,956,922	4,190,345	7,147,267	2,575,222	2,438,943	6,362,053	11,376,218	4,133,775	25,378,400	29,512,175
2017	2,931,079	4,185,533	7,116,612	2,533,849	2,399,386	6,225,312	11,158,547	4,100,167	25,315,095	29,415,262
2018	2,852,839	4,185,055	7,037,894	2,494,861	2,360,777	6,108,505	10,964,143	4,089,046	25,292,695	29,381,741
2019	2,810,300	4,183,917	6,994,217	2,456,820	2,325,428	6,006,973	10,789,221	4,085,911	25,285,504	29,371,415
2020	2,807,884	4,182,922	6,990,806	2,443,321	2,310,843	5,968,849	10,723,013	4,084,740	25,282,170	29,366,910
2021	2,800,967	4,176,151	6,977,118	2,416,249	2,285,748	5,909,599	10,611,596	4,059,551	25,235,247	29,294,798
2022	2,799,556	4,176,086	6,975,642	2,415,350	2,284,560	5,904,702	10,604,612	4,058,724	25,232,307	29,291,031
2023	2,798,441	4,144,499	6,942,940	2,414,184	2,283,418	5,900,283	10,597,885	4,057,904	25,230,061	29,287,965
2024	2,799,547	4,146,580	6,946,127	2,424,618	2,292,815	5,922,123	10,639,556	4,073,687	25,258,073	29,331,760
2025	2,783,164	4,135,872	6,919,036	2,401,598	2,271,284	5,870,089	10,542,971	4,041,524	25,198,768	29,240,292
2026	2,778,152	4,130,880	6,909,032	2,399,102	2,268,977	5,864,405	10,532,484	3,933,017	24,996,880	28,929,897
2027	2,775,068	4,126,429	6,901,497	2,396,722	2,266,621	5,857,415	10,520,758	3,930,637	24,989,023	28,919,660
2028	2,769,310	4,119,009	6,888,319	2,382,162	2,253,179	5,824,077	10,459,418	3,912,863	24,953,235	28,866,098
2029	2,765,761	4,114,822	6,880,583	2,378,493	2,249,779	5,815,078	10,443,350	3,911,723	24,947,850	28,859,573
2030	2,756,236	4,100,702	6,856,938	2,377,293	2,248,608	5,811,866	10,437,767	3,911,690	24,943,504	28,855,194
2031	2,742,299	4,080,413	6,822,712	2,368,002	2,240,046	5,791,042	10,399,090	3,904,028	24,915,538	28,819,566
2032	2,730,714	4,060,905	6,791,619	2,369,887	2,241,719	5,794,748	10,406,354	3,904,961	24,922,699	28,827,660
2033	2,702,770	4,016,586	6,719,356	2,369,818	2,241,600	5,794,095	10,405,513	3,905,088	24,926,319	28,831,407
2034	2,638,633	3,943,318	6,581,951	2,362,151	2,234,335	5,775,465	10,371,951	3,902,834	24,919,578	28,822,412
2035	2,509,313	3,803,907	6,313,220	2,357,649	2,230,162	5,764,702	10,352,513	3,904,298	24,920,035	28,824,333
TOTAL	145,259,048	199,021,995	344,281,043	143,267,515	142,331,062	400,177,330	685,775,907	175,586,544	1,045,250,892	1,220,837,436

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	2,729	0	0	0	0	0	2,729
1965	0	0	6,039	73,693	0	0	0	0	79,732
1966	0	0	12,058	137,555	0	0	0	0	149,613
1967	0	0	26,299	268,043	0	0	0	0	294,342
1968	181,745	9,551	54,666	446,057	1,534,692	12,880	11,531	207,319	2,458,441
1969	177,345	9,575	87,668	525,806	2,372,183	11,493	10,530	351,060	3,545,660
1970	199,087	16,340	94,768	574,762	2,890,679	11,621	13,064	289,288	4,089,609
1971	194,926	17,299	95,789	606,688	3,791,290	16,569	14,360	444,126	5,181,047
1972	217,071	18,166	98,886	632,429	4,946,001	14,013	20,589	1,067,171	7,014,326
1973	199,260	14,238	97,647	640,072	4,871,703	14,263	11,659	403,663	6,252,505
1974	276,960	14,207	98,559	699,072	5,167,884	14,356	12,733	588,892	6,872,663
1975	342,691	15,150	106,801	716,436	6,278,018	15,366	14,415	717,942	8,206,819
1976	299,443	15,695	108,184	775,124	6,626,487	15,734	16,079	557,161	8,413,907
1977	261,518	12,805	112,654	798,697	6,794,187	17,181	13,867	504,374	8,515,283
1978	349,997	11,679	115,625	891,787	8,238,445	17,562	17,904	497,526	10,140,525
1979	378,667	15,535	114,358	896,690	9,351,215	18,826	24,799	944,573	11,744,663
1980	399,944	13,904	126,305	890,169	9,912,132	19,401	24,217	716,972	12,103,044
1981	464,012	31,864	134,327	1,081,707	11,350,740	23,608	22,977	902,542	14,011,777
1982	457,003	14,878	135,410	1,005,958	12,153,444	21,546	22,291	737,241	14,547,771
1983	629,168	16,480	149,572	1,027,960	15,344,654	38,478	30,636	427,067	17,664,015
1984	903,806	16,891	164,892	2,066,632	23,641,410	53,120	59,713	777,432	27,683,896
1985	1,104,506	90,172	187,436	2,382,605	28,228,136	68,791	71,205	2,193,526	34,326,377
1986	1,257,921	36,123	181,607	2,374,526	30,886,694	79,498	76,166	2,179,757	37,072,292
1987	1,125,875	53,411	180,568	2,834,942	29,501,486	77,651	75,579	2,257,325	36,106,837
1988	1,099,374	64,796	193,963	2,751,215	29,213,763	72,897	60,201	2,191,269	35,647,478
1989	1,129,373	51,013	187,704	2,429,708	29,157,963	65,411	68,059	2,423,530	35,512,761
1990	998,839	35,807	219,513	2,502,947	27,051,064	48,927	48,515	1,833,828	32,739,440
1991	595,713	25,257	219,753	2,056,298	17,515,459	26,481	26,796	1,217,178	21,682,935
1992	943,071	41,666	241,508	2,367,829	25,798,206	54,802	50,808	1,896,854	31,394,744
1993	1,153,840	55,457	264,872	2,793,897	31,349,427	74,248	69,467	2,619,345	38,380,553
1994	1,047,408	48,102	310,961	2,904,595	30,052,304	61,809	59,638	2,181,956	36,666,773
1995	1,471,241	47,498	299,545	3,305,030	35,623,679	87,372	76,964	2,689,924	43,601,253
1996	1,295,760	49,324	329,386	3,378,126	35,317,604	82,060	79,940	4,487,681	45,019,881
1997	1,470,816	70,394	352,519	3,507,871	36,541,327	92,416	90,162	3,129,877	45,255,382
1998	1,426,254	67,842	356,983	3,391,994	35,818,765	89,189	87,392	3,029,914	44,268,333
1999	1,367,705	64,606	359,990	3,263,566	34,760,065	85,311	84,276	2,902,557	42,888,076
2000	1,370,728	64,769	360,934	3,273,608	34,831,900	85,603	84,465	2,909,048	42,981,055
2001	1,397,214	63,269	361,416	3,449,680	36,293,928	83,591	82,536	2,849,820	44,581,454
2002	1,393,940	63,098	361,584	3,441,331	36,222,014	83,362	82,314	2,843,090	44,490,733
2003	1,374,736	62,098	361,722	3,392,877	35,810,058	82,030	81,021	2,803,643	43,968,185
2004	1,386,664	62,720	361,759	3,422,968	36,066,105	82,855	81,824	2,828,135	44,293,030
2005	1,356,642	61,159	361,576	3,346,860	35,419,194	80,781	79,806	2,766,507	43,472,525
2006	1,360,252	61,347	361,594	3,355,956	35,496,538	81,029	80,051	2,773,915	43,570,682
2007	1,365,358	61,615	361,618	3,368,826	35,606,130	81,385	80,394	2,784,404	43,709,730
2008	1,409,966	63,932	361,641	3,481,392	36,563,295	84,477	83,398	2,876,006	44,924,107
2009	1,414,844	64,186	361,662	3,493,694	36,668,012	84,813	83,726	2,886,024	45,056,961
2010	1,417,524	64,324	361,689	3,500,250	36,724,361	84,998	83,910	2,891,526	45,128,582
2011	1,421,929	64,554	361,706	3,511,365	36,818,964	85,302	84,206	2,900,569	45,248,595
2012	1,427,344	64,832	361,728	3,525,027	36,935,329	85,677	84,569	2,911,684	45,396,190
2013	1,306,910	58,574	361,790	3,221,078	34,351,623	77,324	76,453	2,664,336	42,118,088
2014	1,246,610	55,439	359,086	3,068,167	33,053,579	73,144	72,402	2,540,498	40,468,925
2015	1,228,513	54,498	355,802	2,949,478	32,669,456	71,887	71,172	2,503,327	39,904,133
2016	1,216,784	53,888	349,777	2,856,003	32,417,547	71,073	70,384	2,479,240	39,514,696
2017	1,212,016	53,641	335,539	2,713,487	32,315,363	70,744	70,062	2,469,443	39,240,295
2018	1,213,244	53,704	312,819	2,599,282	32,341,790	62,310	70,144	2,471,968	39,125,261
2019	1,213,337	53,709	304,336	2,539,617	32,343,766	61,808	70,151	2,472,160	39,058,884
2020	1,213,268	53,706	302,529	2,506,563	32,342,062	61,553	70,146	2,472,014	39,021,841
2021	1,202,012	53,120	301,368	2,456,224	32,100,287	60,633	69,389	2,448,902	38,691,935
2022	1,201,854	53,113	300,752	2,445,750	32,097,095	60,555	69,377	2,448,582	38,677,078
2023	1,201,630	53,100	300,323	2,440,781	32,092,196	60,509	69,363	2,448,121	38,666,023
2024	1,206,758	53,366	299,803	2,451,581	32,202,216	60,848	69,708	2,458,650	38,802,930
2025	1,196,390	52,827	299,236	2,422,958	31,979,659	60,105	69,011	2,437,359	38,517,545
2026	1,195,603	52,787	298,965	2,418,936	31,962,970	60,015	68,956	2,435,744	38,493,976
2027	1,195,322	52,772	298,322	2,415,219	31,956,778	59,952	68,939	2,435,168	38,482,472
2028	1,189,623	52,475	295,857	2,398,811	31,834,616	59,536	68,554	2,423,468	38,322,940
2029	1,189,629	52,474	295,542	2,395,718	31,834,608	59,475	68,555	2,423,481	38,319,482
2030	1,190,139	52,502	295,256	2,393,924	31,845,694	59,442	68,588	2,424,525	38,330,070
2031	1,188,678	52,426	293,659	2,371,844	31,814,251	58,949	68,490	2,421,530	38,269,827
2032	1,188,782	52,431	293,651	2,374,432	31,816,247	58,971	68,499	2,421,745	38,274,758
2033	1,188,942	52,439	293,315	2,369,913	31,819,693	58,849	68,509	2,422,072	38,273,732
2034	1,188,653	52,424	292,694	2,362,841	31,813,467	58,685	68,489	2,421,477	38,258,730
2035	1,190,295	52,510	291,974	2,357,870	31,848,172	58,567	68,604	2,424,846	38,292,838
TOTAL	69,282,472	3,115,553	17,662,568	160,094,797	1,802,390,069	3,933,717	4,042,697	140,961,897	2,201,483,770

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	33,380	0	0	0	0	0	0	0	51,822	0
1964	62,973	27,495	14,452	4,378	37,225	1,145	28,487	8,220	82,953	35,048
1965	118,798	53,095	25,137	7,206	40,837	2,086	50,402	15,247	135,293	35,403
1966	216,130	101,429	44,803	12,499	73,271	3,760	90,547	27,724	232,882	61,564
1967	418,148	211,152	86,258	23,510	141,637	7,296	175,459	54,110	434,047	115,759
1968	737,079	478,808	152,915	41,571	251,568	12,889	311,156	95,604	783,330	209,237
1969	1,060,558	725,285	225,642	61,317	371,507	18,721	458,790	138,265	1,207,644	322,237
1970	1,379,045	905,406	315,733	89,833	520,091	25,267	632,954	185,110	1,780,878	468,279
1971	1,706,796	1,089,448	433,184	128,553	713,792	31,882	857,092	231,613	2,542,024	660,399
1972	2,023,789	1,308,316	562,354	181,424	926,827	42,455	1,111,110	274,961	3,393,194	866,240
1973	2,114,059	1,324,301	696,689	183,937	1,138,351	43,534	1,173,988	287,687	3,976,218	947,886
1974	2,177,612	1,383,713	712,209	193,515	1,165,213	45,265	1,205,771	292,445	4,003,330	991,867
1975	2,354,194	1,451,603	753,133	206,281	1,233,040	48,544	1,272,370	304,659	4,164,046	1,092,372
1976	2,707,247	1,446,889	799,688	215,328	1,308,731	51,516	1,314,774	314,067	4,304,669	1,146,358
1977	2,649,935	1,515,882	695,510	226,280	1,146,432	47,398	1,386,295	329,749	4,558,983	1,210,520
1978	2,967,514	1,600,575	876,503	231,285	1,421,953	47,173	1,385,990	322,068	4,465,366	1,213,581
1979	3,520,543	1,634,966	944,014	238,199	1,520,043	48,450	1,513,097	332,862	4,427,615	1,153,854
1980	4,067,991	1,717,184	1,033,506	259,668	1,681,436	53,404	1,632,174	360,866	4,840,998	1,270,829
1981	4,393,953	1,962,556	1,103,715	271,286	1,797,818	77,827	1,751,027	392,048	5,226,360	1,358,225
1982	3,955,798	2,061,794	1,155,339	280,510	1,883,400	56,024	1,947,372	407,341	5,416,420	1,565,738
1983	5,150,402	2,341,718	1,747,147	333,445	2,830,443	69,458	2,021,897	495,222	6,027,955	1,558,469
1984	7,186,797	3,407,960	2,830,469	445,941	4,558,877	75,838	2,252,758	553,795	7,058,723	2,335,177
1985	8,959,059	3,745,823	3,631,007	542,491	5,841,018	79,888	2,376,296	737,583	7,778,181	2,388,745
1986	8,806,483	4,321,294	4,052,435	578,493	6,522,456	102,652	2,467,046	1,001,975	7,876,892	3,053,336
1987	8,791,350	4,154,984	3,908,836	604,654	6,372,219	211,683	2,487,952	1,025,110	9,151,872	3,025,406
1988	8,312,525	4,232,183	3,917,371	618,688	6,452,346	125,180	2,568,595	783,054	9,501,092	2,837,761
1989	8,667,224	4,100,041	3,553,285	588,212	5,908,900	170,818	2,511,346	1,444,405	8,981,020	2,941,327
1990	9,903,160	4,513,420	4,211,034	619,702	6,944,666	288,520	2,694,007	1,634,269	9,822,751	3,682,582
1991	6,438,264	3,247,764	2,730,637	569,612	4,502,956	174,950	3,466,679	1,294,820	9,012,552	3,061,013
1992	8,535,115	4,471,468	2,801,847	473,522	4,620,301	121,440	4,276,519	1,128,628	8,739,900	3,021,300
1993	8,926,764	4,060,500	3,011,975	487,806	4,966,918	162,250	4,151,023	1,344,819	9,645,536	3,368,067
1994	11,352,821	4,756,250	3,124,042	579,042	5,151,543	229,885	5,309,856	1,728,679	11,001,045	4,286,929
1995	10,523,825	4,948,234	3,742,603	512,036	6,262,157	156,019	4,221,593	1,494,678	10,227,307	3,880,721
1996	11,684,389	4,229,684	7,425,680	943,801	12,246,790	329,368	4,944,377	1,935,106	13,522,006	4,169,154
1997	13,384,295	6,720,402	4,319,955	1,259,611	7,124,284	383,763	10,343,233	2,868,959	19,499,653	3,862,652
1998	13,219,704	6,558,082	3,961,990	1,163,877	6,533,853	367,949	9,784,183	2,738,348	17,186,262	3,761,158
1999	13,062,113	6,336,133	3,687,813	977,090	6,081,649	346,677	9,270,227	2,586,534	16,629,187	3,633,893
2000	13,462,495	6,583,550	3,702,742	716,818	6,106,260	347,807	9,307,329	2,594,854	16,717,090	3,634,321
2001	20,140,042	6,946,661	3,664,556	1,158,748	6,043,279	342,922	9,189,602	2,557,973	16,737,793	5,350,417
2002	20,061,284	6,936,459	3,660,409	1,168,674	6,036,442	341,620	9,153,062	2,548,174	16,948,776	5,379,724
2003	19,652,746	6,796,113	3,580,487	1,147,829	5,904,626	334,837	8,976,700	2,497,131	16,730,702	5,278,349
2004	19,908,896	6,881,750	3,624,748	1,151,860	5,977,627	339,101	9,091,531	2,529,180	16,704,344	5,311,316
2005	19,234,294	6,649,965	3,509,917	1,121,230	5,788,226	327,860	8,790,729	2,444,691	18,862,601	5,177,259
2006	19,311,646	6,677,302	3,527,846	1,128,177	5,817,803	329,145	8,822,133	2,454,375	18,981,573	5,207,837
2007	19,419,705	6,715,910	3,546,121	1,127,666	5,847,940	330,945	8,878,201	2,467,905	18,952,049	5,213,695
2008	20,369,176	7,034,659	3,739,981	1,181,668	6,167,681	346,728	9,293,235	2,586,603	19,803,982	5,471,582
2009	20,479,128	7,076,033	3,755,737	1,180,657	6,193,669	348,558	9,337,734	2,600,366	19,776,692	5,476,327
2010	20,523,805	7,085,715	3,763,102	1,171,929	6,205,815	349,303	9,354,051	2,605,968	20,803,561	5,459,603
2011	20,613,273	7,120,769	3,790,035	1,188,326	6,250,238	350,789	9,387,565	2,617,165	21,100,860	5,523,927
2012	20,729,144	7,154,801	3,816,338	1,198,094	6,293,627	352,722	9,439,526	2,631,670	21,271,987	5,566,124
2013	18,139,404	6,297,450	3,312,711	1,073,059	5,449,580	310,253	8,327,745	2,312,175	19,010,063	4,929,740
2014	16,781,033	5,814,562	3,024,411	992,039	4,988,076	287,022	7,713,591	2,137,853	17,624,537	4,556,238
2015	16,385,597	5,676,652	2,963,316	986,955	4,887,317	280,446	7,554,942	2,088,419	17,536,996	4,511,951
2016	16,038,592	5,542,089	2,880,694	951,095	4,751,040	274,625	7,414,088	2,044,728	16,890,215	4,360,645
2017	15,735,619	5,399,619	2,823,145	941,895	4,656,137	269,410	7,274,889	2,005,726	16,730,785	4,305,982
2018	15,507,581	5,196,565	2,777,371	932,417	4,580,641	265,335	7,177,019	1,975,637	16,532,461	4,248,365
2019	15,208,144	4,997,731	2,704,289	908,806	4,460,116	259,907	7,034,876	1,935,995	16,042,391	4,123,732
2020	14,906,195	4,838,146	2,627,177	890,735	4,332,948	253,635	6,868,870	1,891,230	15,660,568	4,016,943
2021	14,408,080	4,588,098	2,472,058	837,918	4,077,106	244,188	6,574,445	1,823,429	14,643,649	3,762,239
2022	14,273,951	4,476,888	2,413,414	817,292	3,980,396	241,679	6,462,377	1,805,391	14,172,521	3,649,272
2023	14,219,209	4,462,047	2,400,528	817,773	3,959,134	240,619	6,428,649	1,797,904	14,125,755	3,631,259
2024	14,310,121	4,450,479	2,411,006	815,770	3,976,421	242,108	6,463,773	1,809,176	14,073,084	3,625,975
2025	14,071,266	4,364,061	2,355,442	801,461	3,884,773	238,105	6,342,323	1,779,178	13,807,007	3,552,235
2026	14,037,340	4,343,325	2,341,675	798,235	3,862,073	237,504	6,314,066	1,774,818	13,717,324	3,527,588
2027	14,023,788	4,330,711	2,331,232	792,416	3,844,842	237,264	6,297,898	1,773,057	13,600,629	3,501,176
2028	13,886,923	4,267,940	2,305,787	790,320	3,802,883	234,963	6,232,112	1,755,831	13,558,239	3,481,190
2029	13,875,840	4,245,941	2,302,485	789,013	3,797,440	234,765	6,226,505	1,754,399	13,533,111	3,475,267
2030	13,869,207	4,199,651	2,301,398	790,935	3,795,639	234,655	6,217,056	1,753,586	13,570,614	3,481,263
2031	13,736,470	4,098,184	2,277,986	787,693	3,757,033	232,378	6,167,028	1,736,610	13,503,917	3,458,920
2032	13,749,980	4,067,093	2,270,972	776,989	3,745,465	232,599	6,170,311	1,738,284	13,314,871	3,422,640
2033	13,673,651	4,025,834	2,257,983	775,010	3,724,043	231,312	6,140,628	1,728,646	13,278,653	3,410,132
2034	13,560,463	3,994,949	2,237,796	770,521	3,690,747	229,411	6,095,074	1,714,389	13,197,439	3,385,075
2035	13,513,235	3,966,677	2,236,622	778,009	3,688,826	228,523	6,079,542	1,708,549	13,323,098	3,405,523
TOTAL	793,387,155	294,450,216	179,000,427	48,412,635	294,620,457	14,244,017	366,045,647	105,151,695	822,529,943	225,466,917

TABLE B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area					
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)	South Bay Area Future Contractor (38)	Grand Total (39)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	55,537
1963	0	692,054	0	777,256	0	0	0	0	55,823	1,624,120
1964	21,774	1,262,657	9,394	1,596,201	0	0	0	0	84,094	2,781,487
1965	21,903	2,184,191	17,795	2,707,393	0	0	405	405	129,191	4,771,055
1966	38,026	3,906,499	33,480	4,842,614	0	0	565	565	148,545	7,339,169
1967	71,397	7,706,041	68,264	9,513,078	0	0	563	563	204,922	12,698,704
1968	129,106	15,340,767	143,015	18,687,045	0	0	565	565	279,614	24,735,986
1969	199,064	23,187,849	215,531	28,192,410	0	0	3,196	3,196	349,609	35,773,249
1970	290,069	30,663,254	274,014	37,529,933	0	0	15,144	15,144	386,703	45,890,492
1971	409,939	40,018,151	342,929	49,165,802	0	0	16,026	16,026	376,266	58,509,165
1972	537,899	53,018,555	422,865	64,669,989	0	0	17,400	17,400	401,782	76,253,323
1973	588,712	57,346,729	436,221	70,258,312	0	0	17,361	17,361	376,261	80,927,040
1974	612,193	61,853,182	456,154	75,092,469	0	0	17,505	17,505	399,238	86,635,305
1975	645,411	66,835,006	479,000	80,839,659	0	0	18,433	18,433	408,459	93,767,416
1976	669,123	68,564,636	476,191	83,319,217	0	0	17,504	17,504	431,049	97,136,491
1977	697,337	66,314,855	507,675	81,286,851	0	0	18,260	18,260	423,790	95,174,666
1978	709,872	73,016,394	523,800	88,782,074	0	0	17,408	17,408	427,038	104,646,818
1979	713,699	72,746,845	527,040	89,321,227	0	0	20,606	20,606	447,078	106,964,307
1980	778,837	80,017,309	571,899	98,286,101	0	0	17,788	17,788	507,904	116,920,928
1981	806,352	90,954,292	636,827	110,732,286	0	0	21,221	21,221	517,313	131,277,246
1982	854,400	93,214,857	671,238	113,470,231	0	0	28,331	28,331	513,675	134,952,120
1983	953,228	101,894,921	799,443	126,223,748	0	0	16,954	16,954	553,364	151,587,142
1984	1,073,991	138,573,855	869,260	171,223,441	0	0	18,020	18,020	562,188	209,291,261
1985	1,127,160	173,511,410	914,712	211,633,373	0	0	19,977	19,977	682,339	258,978,171
1986	1,152,875	193,523,593	939,198	234,398,728	0	0	19,975	19,975	620,998	284,952,566
1987	1,167,914	178,252,243	901,128	220,055,351	0	0	19,976	19,976	685,543	272,096,867
1988	1,213,989	190,751,561	907,359	232,221,704	0	0	19,983	19,983	708,963	285,163,859
1989	1,200,551	193,548,942	932,258	234,548,329	0	0	20,058	20,058	767,516	287,713,935
1990	1,303,053	238,854,717	1,478,663	285,950,544	0	0	20,075	20,075	818,952	338,664,769
1991	1,370,034	180,099,863	1,138,857	217,108,001	0	0	20,121	20,121	566,040	255,252,402
1992	1,377,351	197,157,038	1,024,681	237,749,110	0	0	20,168	20,168	910,480	288,056,742
1993	1,530,671	169,158,720	1,058,790	211,873,839	0	0	19,925	19,925	985,182	270,781,137
1994	1,631,896	214,557,179	1,026,309	264,735,476	0	0	20,456	20,456	977,243	324,550,329
1995	1,654,286	175,818,262	1,047,335	224,489,056	0	0	20,609	20,609	897,419	292,136,896
1996	1,659,701	199,797,068	1,160,574	264,047,698	0	0	20,769	20,769	998,221	343,978,191
1997	1,870,968	226,057,000	2,243,415	299,938,190	0	0	20,937	20,937	988,534	399,682,542
1998	3,479,084	233,506,750	2,143,635	304,404,875	0	0	20,937	20,937	992,231	402,670,589
1999	3,527,489	235,318,641	2,022,315	303,479,761	0	0	20,937	20,937	1,010,948	399,924,712
2000	3,614,822	270,217,510	2,046,817	339,052,415	0	0	20,937	20,937	1,012,759	435,453,450
2001	3,613,614	312,337,191	2,758,452	390,841,250	0	0	20,937	20,937	1,013,666	489,549,132
2002	3,729,633	312,620,801	2,751,501	391,336,559	0	0	20,937	20,937	1,013,873	489,865,843
2003	3,793,895	305,330,389	2,687,542	382,711,346	0	0	20,937	20,937	1,013,979	480,354,256
2004	3,829,437	309,427,668	2,726,868	387,504,326	0	0	20,937	20,937	1,014,103	485,684,247
2005	3,843,716	298,916,943	2,620,697	377,288,128	0	0	20,937	20,937	1,013,510	474,255,929
2006	3,896,397	300,220,092	2,632,917	379,007,243	0	0	20,937	20,937	1,013,565	476,132,630
2007	3,966,236	302,116,507	2,650,327	381,233,207	0	0	20,937	20,937	1,013,645	478,582,861
2008	4,050,298	317,737,582	2,796,758	400,579,933	0	0	20,937	20,937	1,013,719	499,975,106
2009	4,044,154	319,383,778	2,814,749	402,467,582	0	0	20,937	20,937	1,013,794	502,076,628
2010	4,218,121	319,800,887	2,819,659	404,161,519	0	0	20,937	20,937	1,013,875	503,904,929
2011	4,254,344	321,696,555	2,835,258	406,729,104	0	0	20,937	20,937	1,013,930	506,667,563
2012	4,273,723	323,802,102	2,851,882	409,381,740	0	0	20,937	20,937	1,014,005	509,560,359
2013	4,039,359	281,871,564	2,457,906	357,531,009	0	0	20,937	20,937	971,016	451,485,074
2014	3,890,678	258,557,443	2,239,512	328,606,995	0	0	20,937	20,937	944,136	419,524,625
2015	4,055,748	253,276,343	2,180,593	322,385,275	0	0	20,532	20,532	914,122	411,748,442
2016	3,968,514	246,579,188	2,125,760	313,821,273	0	0	20,372	20,372	897,131	402,289,132
2017	3,940,065	241,499,508	2,075,643	307,658,423	0	0	20,375	20,375	857,167	395,466,681
2018	3,903,911	235,283,559	2,013,609	300,394,471	0	0	20,372	20,372	781,719	387,705,601
2019	3,826,236	227,698,073	1,945,923	291,146,219	0	0	17,741	17,741	717,742	378,095,439
2020	3,928,903	220,907,105	1,889,586	283,012,041	0	0	5,793	5,793	697,434	369,817,838
2021	3,805,776	208,528,444	1,793,247	267,558,677	0	0	4,965	4,965	693,487	353,832,576
2022	3,735,157	201,526,037	1,754,953	259,309,328	0	0	3,578	3,578	692,850	345,554,119
2023	3,724,537	199,399,173	1,751,126	256,957,713	0	0	3,577	3,577	692,174	343,148,277
2024	3,720,027	199,176,043	1,752,765	256,826,748	0	0	3,576	3,576	691,761	343,242,458
2025	3,675,358	194,413,426	1,714,849	250,999,484	0	0	3,573	3,573	690,293	336,913,194
2026	3,660,183	193,490,180	1,707,344	249,811,655	0	0	3,572	3,572	689,862	335,370,478
2027	3,643,355	192,409,570	1,702,705	248,488,643	0	0	3,570	3,570	689,016	334,005,616
2028	3,632,259	190,016,832	1,677,403	245,642,682	0	0	3,568	3,568	687,849	330,870,874
2029	3,628,510	189,223,829	1,669,173	244,756,278	0	0	3,566	3,566	686,376	329,949,208
2030	3,632,617	188,223,671	1,652,625	243,722,917	0	0	3,565	3,565	685,024	328,891,475
2031	3,619,368	184,569,336	1,614,806	239,559,729	0	0	3,564	3,564	681,988	324,556,476
2032	3,595,512	183,516,800	1,603,474	238,204,990	0	0	3,562	3,562	682,333	323,191,276
2033	3,588,070	182,160,126	1,588,329	236,582,417	0	0	3,562	3,562	681,515	321,497,502
2034	3,572,965	180,555,092	1,577,087	234,581,008	0	0	3,561	3,561	677,826	319,297,439
2035	3,586,850	180,746,725	1,569,551	234,831,730	0	0	3,559	3,559	673,602	319,291,795
TOTAL	173,591,702	12,996,461,958	104,472,660	16,417,835,429	0	0	1,062,316	1,062,316	50,849,361	20,922,125,262

TABLE B-20A

Calculation of Delta Water Rates

(Values in millions of dollars [$] or millions of acre-feet [AF] discounted to 1996 at 4.620 percent per annum)

Procedure	*Capital Cost Component (1)*		*Minimum Operation, Maintenance, Power, and Replacement Component (a (2)*		*Total Delta Water Rate (3)*	
Beginning in 1997						
Total Costs of "Initial" Project Conservation Facilities to be reimbursed and project water entitlements during the Project Repayment Period.	$2,980.12 (b	190.39 AF	$1,829.68 (c	190.39 AF	$4,809.80	190.39 AF
Less project power revenues to be realized during the Project Repayment Period.	(1,104.62)		(334.19)		-1438.81	
Less Delta Water Charges paid and project water entitlements prior to 1997.	(1,050.71) (d	(115.12) AF	(644.66)	(115.12) AF	(1,695.37)	(115.12) AF
TOTAL	**$824.79**	**75.27 AF**	**$850.83**	**75.27 AF**	**$1,675.62**	**75.27 AF**
Rate Applicable in 1997	$10.96 per acre-foot		$11.30 per acre-foot		$22.26 per acre-foot	

a) Considering that all operating costs of Project Conservation Facilities will not vary with annual amounts of Project water delivered, and therefore are properly classified as "Minimum" OMP&R Costs.
b) Including net credits of $4,850,000 for settlements as to the magnitude of Project Capital costs incurred prior to December 31, 1960, and net credits of $6,678,320 for settlement as to the magnitude of Project Capital costs incurred during the 1961 through 1978 period.
c) Includes conservation power costs and credits at San Luis.
d) Applying all Delta Water Charges paid prior to 1970 to reimburse Capital costs (the charge was not divided into components until 1970).

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	24.39	12.55	36.94
Less, Oroville Power Revenues	-14.68	-4.44	-19.12
Subtotal	9.71	8.11	17.82
Delta Facilities (b	6.47	5.80	12.27
California Aqueduct, portion			
Reach 1	1.57	2.31	3.88
Reach 2A	0.93	0.43	1.36
Reach 2B	0.47	0.18	0.65
Reach 3	0.34	0.13	0.47
Subtotal	3.31	3.05	6.36
San Luis Facilities	4.72	2.90	7.62
Planning and preoperating costs through 1995	1.37	0.00	1.37
Less, Capital Cost Credits	-0.66	0.00	-0.66
Less, Delta Water Charges paid prior to 1997	-13.96	-8.56	-22.52
Rate applicable in 1997	10.96	11.30	22.26

a) Includes revenue received from non-contractors.
b) Includes (1) Delta Facility planning costs, (2) Delta Studies costs, and (3) Suisun Marsh Facilities Costs.

TABLE B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (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	246,333	851,534	1,097,867	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
1998	260,692	861,774	1,122,466	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
1999	274,494	872,015	1,146,509	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2000	290,523	882,033	1,172,556	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2001	304,215	892,274	1,196,489	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2002	315,791	902,514	1,218,305	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2003	329,482	912,755	1,242,237	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2004	342,840	922,773	1,265,613	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2005	356,197	923,886	1,280,083	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2006	366,215	924,999	1,291,214	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2007	378,459	926,112	1,304,571	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2008	392,930	927,225	1,320,155	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2009	405,174	928,339	1,333,513	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2010	417,418	929,452	1,346,870	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2011	431,889	930,565	1,362,454	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2012	444,133	931,678	1,375,811	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2013	458,604	932,791	1,391,395	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2014	473,074	933,904	1,406,978	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2015	487,545	935,017	1,422,562	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2016	500,902	935,017	1,435,919	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2017	514,259	935,017	1,449,276	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2018	527,617	935,017	1,462,634	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2019	540,974	935,017	1,475,991	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2020	554,332	935,017	1,489,349	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2021	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2022	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2023	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2024	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2025	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2026	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2027	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2028	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2029	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2030	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2031	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2032	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2033	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2034	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
2035	556,558	935,017	1,491,575	1,024,067	935,017	2,226,232	4,185,316	556,558	1,012,624	1,569,182
TOTAL	19,357,809	40,463,188	59,820,997	50,635,200	48,511,981	121,924,867	221,072,048	26,279,397	47,801,588	74,080,985

TABLE B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	40,695	10,469	0	0	165,522	3,177	8,073	98,608	326,544
1969	61,267	3,281	0	0	337,686	4,200	8,805	102,478	517,717
1970	104,405	19,950	0	0	964,915	8,645	17,290	228,095	1,343,300
1971	129,596	21,720	0	0	1,377,772	9,412	20,272	264,260	1,823,032
1972	160,756	24,113	0	0	2,175,835	11,253	43,131	905,057	3,320,145
1973	195,541	26,664	0	386,638	2,373,167	13,333	27,553	373,307	3,396,203
1974	224,202	27,909	0	446,545	2,781,595	13,954	29,770	445,138	3,969,113
1975	329,688	27,413	0	481,560	3,041,048	14,620	33,702	827,591	4,755,622
1976	414,245	29,388	0	549,549	3,931,785	15,673	35,966	877,151	5,853,757
1977	312,532	28,195	0	569,545	4,071,218	15,977	40,289	626,210	5,663,966
1978	342,208	31,588	0	674,939	4,950,959	20,006	41,065	666,516	6,727,281
1979	395,523	34,294	0	772,757	5,901,986	22,863	45,725	771,613	7,944,761
1980	555,341	37,679	0	881,371	6,984,026	27,272	70,658	933,481	9,489,828
1981	740,789	54,204	0	1,351,487	11,140,730	41,556	77,692	1,373,168	14,779,626
1982	782,396	57,248	0	1,518,993	12,703,436	47,707	85,873	1,530,443	16,726,096
1983	543,462	38,004	0	1,057,789	9,141,315	35,471	58,273	78,506	10,952,820
1984	580,379	13,572	0	1,333,200	9,741,623	39,893	61,770	756,132	12,526,569
1985	667,740	42,441	0	1,540,611	11,403,920	48,100	69,320	644,383	14,416,515
1986	745,447	45,362	0	1,714,679	12,925,113	55,946	77,115	1,469,725	17,033,387
1987	762,180	44,485	0	1,766,065	13,410,817	59,314	77,108	1,503,601	17,623,570
1988	827,669	46,411	0	1,916,790	14,707,763	61,882	83,540	1,633,680	19,277,735
1989	921,621	49,728	0	2,125,033	16,312,361	66,304	92,825	1,821,693	21,389,565
1990	964,288	50,136	0	1,998,766	17,276,959	66,848	95,259	1,980,383	22,432,639
1991	1,023,374	53,208	0	2,121,239	18,335,590	70,944	101,096	2,101,729	23,807,180
1992	1,169,299	60,795	0	2,727,688	20,646,125	81,061	115,511	2,401,419	27,201,898
1993	1,172,060	60,939	0	2,734,129	20,694,874	81,252	115,784	2,407,089	27,266,127
1994	1,123,198	58,398	0	2,156,809	20,295,455	77,865	110,957	2,306,739	26,129,421
1995	1,202,009	62,497	0	2,803,995	21,223,694	83,328	118,743	2,468,598	27,962,864
1996	1,181,708	61,441	0	2,449,432	21,172,431	81,921	116,737	2,426,904	27,490,574
1997	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
1998	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
1999	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2000	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2001	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2002	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2003	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2004	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2005	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2006	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2007	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2008	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2009	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2010	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2011	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2012	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2013	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2014	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2015	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2016	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2017	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2018	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2019	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2020	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2021	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2022	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2023	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2024	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2025	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2026	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2027	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2028	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2029	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2030	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2031	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2032	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2033	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2034	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
2035	1,284,536	66,787	0	2,662,573	23,014,782	89,049	126,895	2,638,084	29,882,706
TOTAL	67,770,522	3,726,225	0	139,919,956	1,187,766,218	4,652,688	6,828,807	136,908,973	1,547,573,389

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	1,364,422	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	2,078,770	589,830
1997	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
1998	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
1999	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2000	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2001	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2002	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2003	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2004	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2005	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2006	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2007	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2008	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2009	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2010	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2011	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2012	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2013	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2014	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2015	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2016	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2017	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2018	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2019	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2020	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2021	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2022	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2023	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2024	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2025	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2026	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2027	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2028	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2029	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2030	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2031	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2032	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2033	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2034	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
2035	3,081,104	1,206,618	514,259	129,121	848,194	51,203	1,130,926	385,138	2,284,114	641,155
TOTAL	152,030,696	62,135,285	26,256,992	6,586,650	43,136,616	2,609,334	57,749,123	19,960,909	118,934,215	33,190,899

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	29,464,094	0	16,117	14,694	30,811	0	49,050,202
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	354,307	41,195,923	409,604	51,386,900	196,610	24,576	26,624	247,810	0	85,365,826
1997	0	44,780,648	445,246	55,497,726	213,718	26,715	30,054	270,487	0	92,503,284
1998	44,525	44,780,648	445,246	55,542,251	213,718	26,715	31,167	271,600	0	92,573,521
1999	66,787	44,780,648	445,246	55,564,513	213,718	26,715	32,280	272,713	0	92,620,939
2000	89,049	44,780,648	445,246	55,586,775	213,718	26,715	33,616	274,049	0	92,670,584
2001	89,049	44,780,648	445,246	55,586,775	213,718	612,214	34,952	860,884	0	93,281,352
2002	111,312	44,780,648	445,246	55,609,038	213,718	612,214	36,288	862,220	0	93,326,767
2003	133,574	44,780,648	445,246	55,631,300	213,718	612,214	37,623	863,555	0	93,374,296
2004	144,705	44,780,648	445,246	55,642,431	213,718	612,214	38,959	864,891	0	93,410,139
2005	155,836	44,780,648	445,246	55,653,562	213,718	612,214	40,295	866,227	0	93,437,076
2006	166,967	44,780,648	445,246	55,664,693	213,718	612,214	41,853	867,785	0	93,460,896
2007	385,138	44,780,648	445,246	55,882,864	213,718	612,214	43,412	869,344	0	93,693,983
2008	385,138	44,780,648	445,246	55,882,864	213,718	612,214	44,970	870,902	0	93,711,125
2009	385,138	44,780,648	445,246	55,882,864	213,718	612,214	46,528	872,460	0	93,726,041
2010	385,138	44,780,648	445,246	55,882,864	213,718	612,214	48,087	874,019	0	93,740,957
2011	385,138	44,780,648	445,246	55,882,864	213,718	612,214	49,868	875,800	0	93,758,322
2012	385,138	44,780,648	445,246	55,882,864	213,718	612,214	51,649	877,581	0	93,773,460
2013	385,138	44,780,648	445,246	55,882,864	213,718	612,214	53,652	879,584	0	93,791,047
2014	385,138	44,780,648	445,246	55,882,864	213,718	612,214	55,656	881,588	0	93,808,634
2015	385,138	44,780,648	445,246	55,882,864	213,718	612,214	57,882	883,814	0	93,826,444
2016	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,842,027
2017	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,855,384
2018	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,868,742
2019	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,882,099
2020	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,895,457
2021	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2022	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2023	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2024	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2025	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2026	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2027	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2028	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2029	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2030	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2031	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2032	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2033	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2034	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
2035	385,138	44,780,648	445,246	55,882,864	213,718	612,214	60,108	886,040	0	93,897,683
TOTAL	16,248,235	2,295,264,362	21,121,947	2,855,225,263	9,763,167	21,970,505	2,349,623	34,083,295	0	4,791,855,977

TABLE B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

	North Bay Area			South Bay Area				Central Coastal Area		
Calendar Year	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
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	271,037	474,113	745,150	341,915	374,076	1,044,603	1,760,594	283,059	1,690,943	1,974,002
1998	267,017	467,081	734,098	336,844	368,528	1,029,109	1,734,481	278,861	1,665,863	1,944,724
1999	264,937	463,443	728,380	334,220	365,657	1,021,094	1,720,971	276,689	1,652,888	1,929,577
2000	258,910	452,899	711,809	326,616	357,338	997,863	1,681,817	270,394	1,615,283	1,885,677
2001	256,719	449,068	705,787	323,853	354,315	989,421	1,667,589	268,106	1,601,619	1,869,725
2002	253,524	443,479	697,003	319,823	349,906	977,107	1,646,836	264,770	1,581,685	1,846,455
2003	251,483	439,908	691,391	317,247	347,088	969,240	1,633,575	262,638	1,568,950	1,831,588
2004	255,843	447,535	703,378	322,748	353,106	986,044	1,661,898	267,191	1,596,151	1,863,342
2005	254,213	444,684	698,897	320,692	350,857	979,763	1,651,312	265,489	1,585,985	1,851,474
2006	252,813	442,234	695,047	318,925	348,923	974,364	1,642,212	264,026	1,577,245	1,841,271
2007	251,855	440,559	692,414	317,717	347,602	970,674	1,635,993	263,026	1,571,271	1,834,297
2008	251,425	439,807	691,232	317,175	347,008	969,017	1,633,200	262,577	1,568,590	1,831,167
2009	252,177	441,123	693,300	318,124	348,047	971,917	1,638,088	263,363	1,573,283	1,836,646
2010	252,854	442,307	695,161	318,977	348,981	974,524	1,642,482	264,070	1,577,504	1,841,574
2011	253,390	443,243	696,633	319,653	349,720	976,588	1,645,961	264,629	1,580,845	1,845,474
2012	254,027	444,358	698,385	320,457	350,599	979,045	1,650,101	265,295	1,584,822	1,850,117
2013	254,573	445,314	699,887	321,146	351,353	981,150	1,653,649	265,865	1,588,229	1,854,094
2014	255,279	446,548	701,827	322,036	352,327	983,870	1,658,233	266,602	1,592,633	1,859,235
2015	255,980	447,774	703,754	322,920	353,294	986,570	1,662,784	267,334	1,597,004	1,864,338
2016	256,799	449,207	706,006	323,954	354,425	989,729	1,668,108	268,190	1,602,116	1,870,306
2017	257,899	451,132	709,031	325,342	355,944	993,968	1,675,254	269,338	1,608,979	1,878,317
2018	258,612	452,378	710,990	326,241	356,927	996,716	1,679,884	270,083	1,613,426	1,883,509
2019	259,644	454,185	713,829	327,543	358,352	1,000,695	1,686,590	271,161	1,619,868	1,891,029
2020	260,688	456,011	716,699	328,860	359,793	1,004,719	1,693,372	272,252	1,626,381	1,898,633
2021	261,962	458,238	720,200	330,466	361,550	1,009,625	1,701,641	273,581	1,634,324	1,907,905
2022	263,576	461,062	724,638	332,503	363,779	1,015,849	1,712,131	275,267	1,644,398	1,919,665
2023	297,346	520,134	817,480	375,104	410,387	1,146,001	1,931,492	310,535	1,855,081	2,165,616
2024	223,967	391,775	615,742	282,536	309,111	863,190	1,454,837	233,901	1,397,282	1,631,183
2025	103,218	180,555	283,773	130,210	142,458	397,812	670,480	107,796	643,955	751,751
2026	37,499	65,595	103,094	47,305	51,754	144,524	243,583	39,162	233,947	273,109
2027	3,020	5,283	8,303	3,810	4,168	11,639	19,617	3,154	18,841	21,995
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	8,041,648	13,943,093	21,984,741	10,018,832	11,059,169	30,939,419	52,017,420	8,375,811	47,283,839	55,659,650

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	348,777	15,891	0	730,065	5,532,655	21,555	28,782	713,375	7,391,100
1998	343,604	15,655	0	719,237	5,450,595	21,236	28,355	702,794	7,281,476
1999	340,928	15,534	0	713,635	5,408,142	21,070	28,134	697,321	7,224,764
2000	333,171	15,180	0	697,399	5,285,100	20,591	27,494	681,456	7,060,391
2001	330,353	15,052	0	691,499	5,240,391	20,417	27,262	675,691	7,000,665
2002	326,241	14,864	0	682,893	5,175,170	20,162	26,922	667,281	6,913,533
2003	323,615	14,745	0	677,395	5,133,501	20,000	26,706	661,909	6,857,871
2004	329,225	15,000	0	689,139	5,222,502	20,347	27,169	673,384	6,976,766
2005	327,128	14,905	0	684,749	5,189,238	20,217	26,996	669,095	6,932,328
2006	325,325	14,823	0	680,976	5,160,642	20,106	26,847	665,408	6,894,127
2007	324,093	14,766	0	678,397	5,141,096	20,030	26,745	662,888	6,868,015
2008	323,540	14,741	0	677,239	5,132,323	19,996	26,699	661,757	6,856,295
2009	324,508	14,785	0	679,265	5,147,679	20,055	26,779	663,737	6,876,808
2010	325,379	14,825	0	681,088	5,161,491	20,109	26,851	665,518	6,895,261
2011	326,068	14,856	0	682,530	5,172,422	20,152	26,908	666,927	6,909,863
2012	326,888	14,894	0	684,247	5,185,433	20,202	26,976	668,605	6,927,245
2013	327,591	14,926	0	685,718	5,196,581	20,246	27,034	670,042	6,942,138
2014	328,499	14,967	0	687,620	5,210,991	20,302	27,109	671,900	6,961,388
2015	329,401	15,008	0	689,507	5,225,291	20,358	27,183	673,744	6,980,492
2016	330,456	15,056	0	691,714	5,242,020	20,423	27,270	675,901	7,002,840
2017	331,871	15,121	0	694,677	5,264,474	20,510	27,387	678,796	7,032,836
2018	332,788	15,163	0	696,597	5,279,024	20,567	27,463	680,672	7,052,274
2019	334,117	15,223	0	699,378	5,300,101	20,649	27,572	683,390	7,080,430
2020	335,460	15,284	0	702,190	5,321,412	20,732	27,683	686,138	7,108,899
2021	337,099	15,359	0	705,620	5,347,399	20,833	27,818	689,489	7,143,617
2022	339,177	15,454	0	709,969	5,380,361	20,962	27,990	693,739	7,187,652
2023	382,632	17,434	0	800,932	6,069,703	23,648	31,576	782,622	8,108,547
2024	288,206	13,131	0	603,277	4,571,814	17,812	23,784	589,485	6,107,509
2025	132,823	6,052	0	278,028	2,106,980	8,209	10,961	271,672	2,814,725
2026	48,254	2,199	0	101,007	765,458	2,982	3,982	98,697	1,022,579
2027	3,886	177	0	8,135	61,648	240	321	7,949	82,356
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	10,349,024	471,669	0	22,277,327	167,319,262	639,628	854,087	21,160,328	223,071,325

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	1,250,940	725,821	279,161	79,646	460,165	21,926	573,471	162,148	1,665,710	427,962
1998	1,232,386	715,056	275,020	78,465	453,340	21,601	564,965	159,743	1,641,004	421,615
1999	1,222,788	709,486	272,878	77,853	449,809	21,432	560,565	158,499	1,628,223	418,331
2000	1,194,968	693,345	266,670	76,082	439,575	20,945	547,811	154,893	1,591,179	408,813
2001	1,184,859	687,479	264,414	75,439	435,857	20,768	543,177	153,583	1,577,718	405,355
2002	1,170,112	678,923	261,123	74,500	430,432	20,509	536,417	151,671	1,558,082	400,310
2003	1,160,691	673,457	259,021	73,900	426,966	20,344	532,098	150,450	1,545,537	397,087
2004	1,180,814	685,132	263,512	75,181	434,369	20,697	541,323	153,058	1,572,333	403,971
2005	1,173,293	680,769	261,833	74,702	431,602	20,565	537,875	152,083	1,562,318	401,398
2006	1,166,827	677,017	260,390	74,291	429,224	20,452	534,911	151,245	1,553,708	399,186
2007	1,162,408	674,453	259,404	74,009	427,598	20,374	532,885	150,673	1,547,824	397,674
2008	1,160,424	673,302	258,961	73,883	426,868	20,339	531,976	150,415	1,545,182	396,996
2009	1,163,896	675,316	259,736	74,104	428,146	20,400	533,567	150,865	1,549,805	398,183
2010	1,167,019	677,128	260,433	74,303	429,294	20,455	534,999	151,270	1,553,964	399,252
2011	1,169,491	678,563	260,985	74,460	430,204	20,498	536,132	151,591	1,557,255	400,097
2012	1,172,433	680,269	261,641	74,647	431,286	20,550	537,480	151,972	1,561,172	401,104
2013	1,174,953	681,732	262,204	74,808	432,213	20,594	538,636	152,299	1,564,528	401,966
2014	1,178,211	683,622	262,931	75,015	433,411	20,651	540,130	152,721	1,568,867	403,081
2015	1,181,445	685,498	263,652	75,221	434,601	20,708	541,612	153,140	1,573,172	404,187
2016	1,185,227	687,693	264,496	75,462	435,992	20,774	543,346	153,630	1,578,209	405,481
2017	1,190,304	690,639	265,629	75,785	437,860	20,863	545,673	154,288	1,584,969	407,218
2018	1,193,594	692,547	266,363	75,995	439,070	20,921	547,181	154,715	1,589,349	408,343
2019	1,198,360	695,313	267,427	76,298	440,823	21,004	549,366	155,333	1,595,695	409,974
2020	1,203,178	698,108	268,502	76,605	442,595	21,089	551,575	155,957	1,602,111	411,622
2021	1,209,054	701,518	269,813	76,979	444,757	21,192	554,269	156,719	1,609,935	413,632
2022	1,216,506	705,842	271,477	77,454	447,498	21,322	557,685	157,685	1,619,859	416,182
2023	1,372,367	796,275	306,259	87,377	504,833	24,054	629,137	177,888	1,827,398	469,504
2024	1,033,693	599,770	230,680	65,814	380,249	18,118	473,878	133,988	1,376,431	353,639
2025	476,391	276,412	106,312	30,331	175,243	8,350	218,393	61,750	634,346	162,979
2026	173,071	100,419	38,623	11,019	63,665	3,033	79,341	22,434	230,455	59,210
2027	13,939	8,087	3,111	887	5,127	244	6,390	1,807	18,560	4,769
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	37,042,819	21,445,850	8,280,080	2,360,968	13,649,339	650,640	17,011,421	4,812,052	49,109,391	12,650,662

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	62,007	26,598,335	225,898	32,533,190	42,510	5,314	9,722	57,546	0	44,461,582
1998	248,496	26,203,830	222,547	32,238,068	41,879	5,235	9,578	56,692	0	43,989,539
1999	246,561	25,999,735	220,814	31,986,974	41,553	5,194	9,503	56,250	0	43,646,916
2000	240,951	25,408,211	215,790	31,259,233	40,608	5,076	9,287	54,971	0	42,653,898
2001	238,913	25,193,271	213,965	30,994,798	40,264	5,033	9,208	54,505	0	42,293,069
2002	235,940	24,879,721	211,302	30,609,042	39,763	4,971	9,094	53,828	0	41,766,697
2003	234,040	24,679,395	209,601	30,362,587	39,443	4,931	9,021	53,395	0	41,430,407
2004	238,098	25,107,269	213,234	30,888,991	40,127	5,016	9,177	54,320	0	42,148,695
2005	236,581	24,947,352	211,876	30,692,247	39,871	4,984	9,119	53,974	0	41,880,232
2006	235,277	24,809,873	210,709	30,523,110	39,652	4,957	9,068	53,677	0	41,649,444
2007	234,386	24,715,906	209,911	30,407,505	39,501	4,938	9,034	53,473	0	41,491,697
2008	233,986	24,673,730	209,552	30,355,614	39,434	4,930	9,019	53,383	0	41,420,891
2009	234,686	24,747,553	210,179	30,446,436	39,552	4,944	9,046	53,542	0	41,544,820
2010	235,316	24,813,956	210,743	30,528,132	39,658	4,958	9,070	53,686	0	41,656,296
2011	235,814	24,866,507	211,190	30,592,787	39,742	4,968	9,089	53,799	0	41,744,517
2012	236,408	24,929,056	211,721	30,669,739	39,842	4,981	9,112	53,935	0	41,849,522
2013	236,916	24,982,652	212,176	30,735,677	39,928	4,991	9,131	54,050	0	41,939,495
2014	237,573	25,051,927	212,764	30,820,904	40,038	5,005	9,157	54,200	0	42,055,787
2015	238,225	25,120,677	213,348	30,905,486	40,148	5,019	9,182	54,349	0	42,171,203
2016	238,987	25,201,100	214,031	31,004,428	40,277	5,035	9,211	54,523	0	42,306,211
2017	240,011	25,309,049	214,948	31,137,236	40,449	5,056	9,251	54,756	0	42,487,430
2018	240,674	25,378,998	215,542	31,223,292	40,561	5,070	9,276	54,907	0	42,604,856
2019	241,635	25,480,329	216,403	31,347,960	40,723	5,091	9,313	55,127	0	42,774,965
2020	242,607	25,582,781	217,273	31,474,003	40,887	5,111	9,351	55,349	0	42,946,955
2021	243,792	25,707,715	218,334	31,627,709	41,086	5,136	9,397	55,619	0	43,156,691
2022	245,294	25,866,180	219,680	31,822,664	41,340	5,168	9,454	55,962	0	43,422,712
2023	276,722	29,180,200	247,826	35,899,840	46,636	5,830	10,666	63,132	0	48,986,107
2024	208,432	21,979,076	186,667	27,040,435	35,127	4,391	8,034	47,552	0	36,897,258
2025	96,059	10,129,341	86,028	12,461,935	16,189	2,024	3,702	21,915	0	17,004,579
2026	34,898	3,679,952	31,254	4,527,374	5,881	735	1,345	7,961	0	6,177,700
2027	2,811	296,372	2,517	364,621	474	59	108	641	0	497,533
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	7,291,366	788,645,051	6,696,378	969,646,017	1,247,244	157,701	286,569	1,691,514	0	1,324,070,667

TABLE B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	11,750	43,787	0	55,537	0	0	0
1963	0	0	0	151,140	190,453	449,448	791,041	0	0	0
1964	0	0	0	170,797	277,738	623,343	1,071,878	6,064	20,521	26,585
1965	0	0	0	245,718	404,749	1,160,661	1,811,128	11,435	31,771	43,206
1966	18,096	0	18,096	271,833	422,196	1,415,802	2,109,831	20,198	49,707	69,905
1967	41,644	0	41,644	360,510	545,861	1,856,666	2,763,037	38,006	84,262	122,268
1968	128,824	0	128,824	411,342	633,770	2,181,689	3,226,801	63,565	133,233	196,798
1969	254,981	0	254,981	477,464	584,079	2,302,120	3,363,663	118,200	235,433	353,633
1970	277,819	0	277,819	541,779	640,965	2,791,410	3,974,154	130,918	260,050	390,968
1971	227,749	0	227,749	479,103	675,865	2,810,473	3,965,441	131,734	262,620	394,354
1972	225,255	0	225,255	609,002	823,069	3,031,211	4,463,282	137,493	274,669	412,162
1973	221,370	31,433	252,803	594,730	717,165	3,124,257	4,436,152	134,288	269,504	403,792
1974	240,782	33,008	273,790	634,867	747,607	3,328,496	4,710,970	135,296	272,061	407,357
1975	237,756	36,366	274,122	691,749	793,731	3,217,525	4,703,005	151,619	302,951	454,570
1976	271,596	40,918	312,514	804,332	944,142	3,366,024	5,114,498	260,819	506,160	766,979
1977	293,936	45,185	339,121	772,019	922,884	3,306,953	5,001,856	270,548	527,595	798,143
1978	274,184	49,273	323,457	859,588	936,502	3,716,084	5,512,174	277,188	543,157	820,345
1979	289,799	53,442	343,241	954,382	1,010,194	3,822,538	5,787,114	274,968	542,344	817,312
1980	311,182	86,198	397,380	1,106,087	1,174,559	4,123,100	6,403,746	312,932	597,243	910,175
1981	347,576	113,003	460,579	1,211,235	1,349,932	4,512,187	7,073,354	337,333	652,621	989,954
1982	438,710	142,022	580,732	1,286,078	1,368,646	4,887,730	7,542,454	358,889	739,238	1,098,127
1983	355,203	163,551	518,754	1,163,264	1,262,087	4,948,575	7,373,926	387,867	758,728	1,146,595
1984	467,862	247,070	714,932	1,467,598	1,479,171	6,877,932	9,824,701	440,182	857,710	1,297,892
1985	736,846	386,900	1,123,746	1,964,964	2,229,898	7,810,479	12,005,341	535,835	1,034,861	1,570,696
1986	1,121,275	715,360	1,836,635	1,830,948	2,017,582	8,211,743	12,060,273	569,026	1,097,682	1,666,708
1987	1,774,406	1,584,700	3,359,106	2,326,004	2,509,429	7,998,794	12,834,227	602,205	1,207,335	1,809,540
1988	2,351,955	2,548,236	4,900,191	2,385,592	2,777,657	7,840,341	13,003,590	703,591	1,496,148	2,199,739
1989	2,527,031	3,696,804	6,223,835	2,346,831	2,498,761	7,523,551	12,369,143	802,187	1,869,702	2,671,889
1990	2,901,009	3,852,629	6,753,638	2,794,825	2,928,299	8,355,196	14,078,320	961,097	2,097,932	3,059,029
1991	2,939,449	4,027,065	6,966,514	2,059,863	2,381,377	6,425,592	10,866,832	1,010,236	2,422,530	3,432,766
1992	2,799,412	4,152,725	6,952,137	2,672,598	3,077,059	8,020,375	13,770,032	1,150,570	2,585,866	3,736,436
1993	2,825,154	4,122,917	6,948,071	3,398,925	2,998,841	8,902,967	15,300,733	1,218,195	2,786,256	4,004,451
1994	2,957,202	4,219,384	7,176,586	3,425,470	3,596,602	9,633,560	16,655,632	1,386,641	3,625,123	5,011,764
1995	2,962,335	4,415,038	7,377,373	3,608,334	3,231,757	8,297,238	15,137,329	1,729,700	6,487,689	8,217,389
1996	3,266,916	5,285,294	8,552,210	3,178,115	3,875,136	8,619,596	15,672,847	2,764,854	15,128,346	17,893,200
1997	3,533,359	5,783,241	9,316,600	4,793,956	4,626,532	12,063,981	21,484,469	4,274,162	29,736,379	34,010,541
1998	3,525,504	5,757,045	9,282,549	4,630,351	4,479,696	11,742,542	20,852,589	4,289,184	29,850,158	34,139,342
1999	3,550,298	5,776,417	9,326,715	4,545,607	4,403,879	11,573,355	20,522,841	4,275,047	29,680,322	33,955,369
2000	3,570,765	5,695,515	9,266,280	4,542,191	4,399,397	11,559,355	20,500,943	4,270,244	29,555,174	33,825,418
2001	3,589,102	5,654,216	9,243,318	4,504,627	4,364,611	11,475,341	20,344,579	5,574,866	29,123,150	34,698,016
2002	3,600,188	5,662,715	9,262,903	4,492,774	4,353,063	11,446,034	20,291,871	5,547,885	29,064,179	34,612,064
2003	3,608,274	5,662,698	9,270,972	4,449,226	4,312,837	11,349,110	20,111,173	5,479,693	28,931,260	34,410,953
2004	3,636,180	5,694,924	9,331,104	4,480,210	4,342,123	11,421,322	20,243,655	5,513,724	29,012,097	34,525,821
2005	3,644,122	5,677,580	9,321,702	4,419,667	4,286,467	11,287,840	19,993,974	5,465,020	28,916,397	34,381,417
2006	3,657,758	5,676,878	9,334,636	4,425,634	4,291,595	11,299,259	20,016,488	5,471,398	28,921,923	34,393,321
2007	3,675,870	5,678,542	9,354,412	4,435,465	4,300,354	11,319,579	20,055,398	5,481,377	28,935,928	34,417,305
2008	3,719,524	5,709,342	9,428,866	4,530,371	4,386,908	11,525,422	20,442,701	5,616,034	29,179,061	34,795,095
2009	3,739,913	5,713,836	9,453,749	4,541,698	4,397,422	11,550,885	20,490,005	5,627,129	29,202,516	34,829,645
2010	3,759,773	5,717,713	9,477,486	4,550,865	4,405,949	11,571,579	20,528,393	5,634,982	29,219,740	34,854,722
2011	3,782,970	5,721,346	9,504,316	4,560,953	4,415,279	11,594,100	20,570,332	5,645,027	29,240,342	34,885,369
2012	3,803,633	5,726,084	9,529,717	4,573,379	4,426,771	11,621,835	20,621,985	5,657,994	29,266,703	34,924,697
2013	3,744,052	5,638,605	9,382,657	4,205,225	4,086,370	10,697,154	18,988,749	5,267,514	28,558,627	33,826,141
2014	3,725,102	5,599,888	9,324,990	4,051,511	3,913,084	10,275,124	18,239,719	5,083,072	28,216,622	33,299,694
2015	3,725,165	5,583,344	9,308,509	3,966,436	3,781,109	9,803,655	17,551,200	5,001,973	28,070,634	33,072,607
2016	3,714,623	5,574,569	9,289,192	3,923,243	3,728,385	9,578,014	17,229,642	4,958,523	27,993,140	32,951,663
2017	3,703,237	5,571,682	9,274,919	3,883,258	3,690,347	9,445,512	17,019,117	4,926,063	27,936,698	32,862,761
2018	3,639,068	5,572,450	9,211,518	3,845,169	3,652,721	9,331,453	16,829,343	4,915,687	27,918,745	32,834,432
2019	3,610,918	5,573,119	9,184,037	3,808,430	3,618,797	9,233,900	16,661,127	4,913,630	27,917,996	32,831,626
2020	3,622,904	5,573,950	9,196,854	3,796,248	3,605,653	9,199,800	16,601,701	4,913,550	27,921,175	32,834,725
2021	3,619,487	5,569,406	9,188,893	3,770,782	3,582,315	9,145,456	16,498,553	4,889,690	27,882,195	32,771,885
2022	3,619,690	5,572,165	9,191,855	3,771,920	3,583,356	9,146,783	16,502,059	4,890,549	27,889,329	32,779,878
2023	3,652,345	5,599,650	9,251,995	3,813,355	3,628,822	9,272,516	16,714,693	4,924,997	28,097,766	33,022,763
2024	3,580,072	5,473,372	9,053,444	3,731,221	3,536,943	9,011,545	16,279,709	4,864,146	27,667,979	32,532,125
2025	3,442,940	5,251,444	8,694,384	3,555,875	3,348,759	8,494,133	15,398,767	4,705,878	26,855,347	31,561,225
2026	3,372,209	5,131,492	8,503,701	3,470,474	3,255,748	8,235,161	14,961,383	4,528,737	26,243,451	30,772,188
2027	3,334,646	5,066,729	8,401,375	3,424,599	3,205,806	8,095,286	14,725,691	4,490,349	26,020,488	30,510,837
2028	3,325,868	5,054,026	8,379,894	3,406,229	3,188,196	8,050,309	14,644,734	4,469,421	25,965,859	30,435,280
2029	3,322,319	5,049,839	8,372,158	3,402,560	3,184,796	8,041,310	14,628,666	4,468,281	25,960,474	30,428,755
2030	3,312,794	5,035,719	8,348,513	3,401,360	3,183,625	8,038,098	14,623,083	4,468,248	25,956,128	30,424,376
2031	3,298,857	5,015,430	8,314,287	3,392,069	3,175,063	8,017,274	14,584,406	4,460,586	25,928,162	30,388,748
2032	3,287,272	4,995,922	8,283,194	3,393,954	3,176,736	8,020,980	14,591,670	4,461,519	25,935,323	30,396,842
2033	3,259,328	4,951,603	8,210,931	3,393,885	3,176,617	8,020,327	14,590,829	4,461,646	25,938,943	30,400,589
2034	3,195,191	4,878,335	8,073,526	3,386,218	3,169,352	8,001,697	14,557,267	4,459,392	25,932,202	30,391,594
2035	3,065,871	4,738,924	7,804,795	3,381,716	3,165,179	7,990,934	14,537,829	4,460,856	25,932,659	30,393,515
TOTAL	172,658,505	253,428,276	426,086,781	203,921,547	201,902,212	553,041,616	958,865,375	210,241,752	1,140,336,319	1,350,578,071

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	2,729	0	0	0	0	0	2,729
1965	0	0	6,039	73,693	0	0	0	0	79,732
1966	0	0	12,058	137,555	0	0	0	0	149,613
1967	0	0	26,299	268,043	0	0	0	0	294,342
1968	222,440	20,020	54,666	446,057	1,700,214	16,057	19,604	305,927	2,784,985
1969	238,612	12,856	87,668	525,806	2,709,869	15,693	19,335	453,538	4,063,377
1970	303,492	36,290	94,768	574,762	3,855,594	20,266	30,354	517,383	5,432,909
1971	324,522	39,019	95,789	606,688	5,169,062	25,981	34,632	708,386	7,004,079
1972	377,827	42,279	98,886	632,429	7,121,836	25,266	63,720	1,972,228	10,334,471
1973	394,801	40,902	97,647	1,026,710	7,244,870	27,596	39,212	776,970	9,648,708
1974	501,162	42,116	98,559	1,145,617	7,949,479	28,310	42,503	1,034,030	10,841,776
1975	672,379	42,563	106,801	1,197,996	9,319,066	29,986	48,117	1,545,533	12,962,441
1976	713,688	45,083	108,184	1,324,673	10,558,272	31,407	52,045	1,434,312	14,267,664
1977	574,050	41,000	112,654	1,368,242	10,865,405	33,158	54,156	1,130,584	14,179,249
1978	692,205	43,267	115,625	1,566,726	13,189,404	37,568	58,969	1,164,042	16,867,806
1979	774,190	49,829	114,358	1,669,447	15,253,201	41,689	70,524	1,716,186	19,689,424
1980	955,285	51,583	126,305	1,771,540	16,896,158	46,673	94,875	1,650,453	21,592,872
1981	1,204,801	86,068	134,327	2,433,194	22,491,470	65,164	100,669	2,275,710	28,791,403
1982	1,239,399	72,126	135,410	2,524,951	24,856,880	69,253	108,164	2,267,684	31,273,867
1983	1,172,630	54,484	149,572	2,085,749	24,485,969	73,949	88,909	505,573	28,616,835
1984	1,484,185	30,463	164,892	3,399,832	33,383,033	93,013	121,483	1,533,564	40,210,465
1985	1,772,246	132,613	187,436	3,923,216	39,632,056	116,891	140,525	2,837,909	48,742,892
1986	2,003,368	81,485	181,607	4,089,205	43,811,807	135,444	153,281	3,649,482	54,105,679
1987	1,888,055	97,896	180,568	4,601,007	42,912,303	136,965	152,687	3,760,926	53,730,407
1988	1,961,029	112,864	193,963	4,735,293	44,648,027	137,007	146,592	3,891,697	55,826,472
1989	2,110,267	103,526	187,704	4,671,430	46,721,776	135,448	165,811	4,361,959	58,457,921
1990	2,016,476	88,362	219,513	4,789,524	45,275,374	119,023	148,141	3,923,329	56,579,742
1991	1,701,339	82,196	219,753	4,536,917	37,416,032	102,460	134,663	3,487,124	47,680,484
1992	2,224,936	107,588	241,508	5,548,208	48,597,754	142,790	175,604	4,528,490	61,566,878
1993	2,445,570	121,855	264,872	5,800,475	54,535,973	162,881	195,145	5,271,247	68,798,018
1994	2,288,871	111,879	310,961	5,306,075	52,833,579	146,974	180,361	4,730,628	65,909,328
1995	2,812,477	116,334	299,545	6,426,910	59,741,555	179,298	207,197	5,443,320	75,226,636
1996	2,646,801	118,468	329,386	6,181,899	59,212,276	174,441	210,655	7,260,951	76,134,877
1997	3,104,129	153,072	352,519	6,900,509	65,088,764	203,020	245,839	6,481,336	82,529,188
1998	3,054,394	150,284	356,983	6,773,804	64,284,142	199,474	242,642	6,370,792	81,432,515
1999	2,993,169	146,927	359,990	6,639,774	63,182,989	195,430	239,305	6,237,962	79,995,546
2000	2,988,435	146,736	360,934	6,633,580	63,131,782	195,243	238,854	6,228,588	79,924,152
2001	3,012,103	145,108	361,416	6,803,752	64,549,101	193,057	236,693	6,163,595	81,464,825
2002	3,004,717	144,749	361,584	6,786,797	64,411,966	192,573	236,131	6,148,455	81,286,972
2003	2,982,887	143,630	361,722	6,732,845	63,958,341	191,079	234,622	6,103,636	80,708,762
2004	3,000,425	144,507	361,759	6,774,680	64,303,389	192,251	235,888	6,139,603	81,152,502
2005	2,968,306	142,851	361,576	6,694,182	63,623,214	190,047	233,697	6,073,686	80,287,559
2006	2,970,113	142,957	361,594	6,699,505	63,671,962	190,184	233,793	6,077,407	80,347,515
2007	2,973,987	143,168	361,618	6,709,796	63,762,008	190,464	234,034	6,085,376	80,460,451
2008	3,018,042	145,460	361,641	6,821,204	64,710,400	193,522	236,992	6,175,847	81,663,108
2009	3,023,888	145,758	361,662	6,835,532	64,830,473	193,917	237,400	6,187,845	81,816,475
2010	3,027,439	145,936	361,689	6,843,911	64,900,634	194,156	237,656	6,195,128	81,906,549
2011	3,032,533	146,197	361,706	6,856,468	65,006,168	194,503	238,009	6,205,580	82,041,164
2012	3,038,768	146,513	361,728	6,871,847	65,135,544	194,928	238,440	6,218,373	82,206,141
2013	2,919,037	140,287	361,790	6,569,369	62,562,986	186,619	230,382	5,972,462	78,942,932
2014	2,859,645	137,193	359,086	6,418,360	61,279,352	182,495	226,406	5,850,482	77,313,019
2015	2,842,450	136,293	355,802	6,301,558	60,909,529	181,294	225,250	5,815,155	76,767,331
2016	2,831,776	135,731	349,777	6,210,290	60,674,349	180,545	224,549	5,793,225	76,400,242
2017	2,828,423	135,549	335,539	6,070,737	60,594,619	180,303	224,344	5,786,323	76,155,837
2018	2,830,568	135,654	312,819	5,958,452	60,635,596	171,926	224,502	5,790,724	76,060,241
2019	2,831,990	135,719	304,336	5,901,568	60,658,649	171,506	224,618	5,793,634	76,022,020
2020	2,833,264	135,777	302,529	5,871,326	60,678,256	171,334	224,724	5,796,236	76,013,446
2021	2,823,647	135,266	301,368	5,824,417	60,462,468	170,515	224,102	5,776,475	75,718,258
2022	2,825,567	135,354	300,752	5,818,292	60,492,238	170,566	224,262	5,780,405	75,747,436
2023	2,868,798	137,321	300,323	5,904,286	61,176,681	173,206	227,834	5,868,827	76,657,276
2024	2,779,500	133,284	299,803	5,717,431	59,788,812	167,709	220,387	5,686,219	74,793,145
2025	2,613,749	125,666	299,236	5,363,559	57,101,421	157,363	206,867	5,347,115	71,214,976
2026	2,528,393	121,773	298,965	5,182,516	55,743,210	152,046	199,833	5,172,525	69,399,261
2027	2,483,744	119,736	298,322	5,085,927	55,033,208	149,241	196,155	5,081,201	68,447,534
2028	2,474,159	119,262	295,857	5,061,384	54,849,398	148,585	195,449	5,061,552	68,205,646
2029	2,474,165	119,261	295,542	5,058,291	54,849,390	148,524	195,450	5,061,565	68,202,188
2030	2,474,675	119,289	295,256	5,056,497	54,860,476	148,491	195,483	5,062,609	68,212,776
2031	2,473,214	119,213	293,659	5,034,417	54,829,033	147,998	195,385	5,059,614	68,152,533
2032	2,473,318	119,218	293,651	5,037,005	54,831,029	148,020	195,394	5,059,829	68,157,464
2033	2,473,478	119,226	293,315	5,032,486	54,834,475	147,898	195,404	5,060,156	68,156,438
2034	2,473,189	119,211	292,694	5,025,414	54,828,249	147,734	195,384	5,059,561	68,141,436
2035	2,474,831	119,297	291,974	5,020,443	54,862,954	147,616	195,499	5,062,930	68,175,544
TOTAL	147,402,018	7,313,447	17,662,568	322,292,080	3,157,475,549	9,226,033	11,725,591	299,031,198	3,972,128,484

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	33,380	0	0	0	0	0	0	0	51,822	0
1964	62,973	27,495	14,452	4,378	37,225	1,145	28,487	8,220	82,953	35,048
1965	118,798	53,095	25,137	7,206	40,837	2,086	50,402	15,247	135,293	35,403
1966	216,130	101,429	44,803	12,499	73,271	3,760	90,547	27,724	232,882	61,564
1967	418,148	211,152	86,258	23,510	141,637	7,296	175,459	54,110	434,047	115,759
1968	737,079	491,868	152,915	41,571	251,568	12,889	311,156	95,604	783,330	209,237
1969	1,060,558	743,089	225,642	61,317	371,507	18,721	458,790	138,265	1,207,644	322,237
1970	1,379,045	943,311	315,733	89,833	520,091	25,267	632,954	185,110	1,780,878	468,279
1971	1,706,796	1,137,956	433,184	128,553	713,792	31,882	857,092	231,613	2,542,024	660,399
1972	2,184,545	1,383,067	604,151	186,086	991,130	43,822	1,178,628	287,982	3,762,933	951,442
1973	2,336,266	1,431,464	748,241	191,216	1,218,345	46,111	1,269,092	313,818	4,031,126	962,224
1974	2,456,702	1,526,979	771,748	204,306	1,258,243	48,986	1,327,640	332,076	4,468,480	1,106,294
1975	2,674,016	1,617,910	817,097	219,531	1,333,555	53,296	1,413,092	355,648	4,643,779	1,212,077
1976	3,138,265	1,654,562	874,137	232,373	1,426,281	57,785	1,489,140	381,658	4,843,441	1,283,500
1977	3,119,857	1,742,384	774,654	245,359	1,268,612	54,259	1,576,143	407,004	5,099,393	1,349,617
1978	3,567,694	1,875,394	973,816	255,713	1,569,366	56,860	1,622,903	420,413	5,097,134	1,378,894
1979	4,240,716	1,955,043	1,059,047	268,035	1,691,513	60,339	1,797,737	450,147	5,142,072	1,343,614
1980	4,925,809	2,094,029	1,168,426	295,617	1,892,172	67,660	1,969,351	499,456	5,652,950	1,486,523
1981	5,749,053	2,555,187	1,322,428	328,923	2,141,110	100,773	2,285,840	603,444	6,464,018	1,688,869
1982	5,507,232	2,725,876	1,409,637	346,918	2,284,139	82,359	2,260,429	642,441	6,780,842	1,930,220
1983	6,261,396	2,814,239	1,931,430	381,204	3,121,810	88,460	2,456,414	659,147	6,971,730	1,810,565
1984	7,637,202	3,917,562	3,033,383	498,188	4,880,595	96,557	2,725,040	728,295	8,062,483	2,601,560
1985	9,524,940	4,337,169	3,871,351	604,031	6,222,988	104,362	2,928,030	938,188	8,931,164	2,697,150
1986	9,441,549	4,980,553	4,327,782	648,653	6,960,954	130,474	3,093,040	1,225,760	9,162,145	3,404,135
1987	9,443,800	4,831,160	4,196,967	677,758	6,839,314	240,747	3,135,954	1,253,764	10,471,601	3,390,185
1988	9,088,432	5,031,876	4,263,899	707,100	7,022,834	159,358	3,336,232	1,047,440	11,091,026	3,279,900
1989	10,956,485	5,029,214	3,962,843	692,808	6,592,025	210,882	3,412,416	1,748,541	10,848,744	3,464,611
1990	12,295,837	5,470,257	4,639,532	728,537	7,651,367	330,343	3,630,308	1,948,344	11,750,678	4,225,741
1991	9,189,796	4,349,433	3,206,288	691,029	5,287,406	220,979	4,503,296	1,640,296	11,195,587	3,667,985
1992	11,741,825	5,804,260	3,359,330	616,252	5,539,700	175,103	5,489,801	1,531,375	11,310,640	3,735,308
1993	12,162,953	5,408,540	3,575,186	632,187	5,895,762	216,407	5,376,284	1,751,279	12,247,028	4,090,379
1994	14,470,960	6,058,537	3,668,212	718,812	6,048,980	282,088	6,492,927	2,120,413	13,523,666	4,986,976
1995	13,907,064	6,368,330	4,335,552	664,685	7,240,028	212,702	5,509,392	1,919,924	12,988,524	4,646,278
1996	15,125,236	5,692,842	8,034,201	1,101,221	13,250,322	387,112	6,262,949	2,368,109	16,361,109	4,960,805
1997	17,716,339	8,652,841	5,113,375	1,468,378	8,432,643	456,892	12,047,630	3,416,245	23,449,477	4,931,769
1998	17,533,194	8,479,756	4,751,269	1,371,463	7,835,387	440,753	11,480,074	3,283,229	21,111,380	4,823,928
1999	17,366,005	8,252,237	4,474,950	1,184,064	7,379,652	419,312	10,961,718	3,130,171	20,541,524	4,693,379
2000	17,738,567	8,483,513	4,483,671	922,021	7,394,029	419,955	10,986,066	3,134,885	20,592,383	4,684,289
2001	24,406,005	8,840,758	4,443,229	1,363,308	7,327,330	414,893	10,863,705	3,096,694	20,599,625	6,396,927
2002	24,312,500	8,822,000	4,435,791	1,372,295	7,315,068	413,332	10,820,405	3,084,983	20,790,972	6,421,189
2003	23,894,541	8,676,188	4,353,767	1,350,850	7,179,786	406,384	10,639,724	3,032,719	20,560,353	6,316,591
2004	24,170,814	8,773,500	4,402,519	1,356,162	7,260,190	411,001	10,763,780	3,067,376	20,560,791	6,356,442
2005	23,488,691	8,537,352	4,286,009	1,325,053	7,068,022	399,628	10,459,530	2,981,912	22,709,033	6,219,812
2006	23,559,577	8,560,937	4,302,495	1,331,589	7,095,221	400,800	10,487,970	2,990,758	22,819,395	6,248,178
2007	23,663,217	8,596,981	4,319,784	1,330,796	7,123,732	402,522	10,542,012	3,003,716	22,783,987	6,252,524
2008	24,610,704	8,914,579	4,513,201	1,384,672	7,442,743	418,270	10,956,137	3,122,156	23,633,278	6,509,733
2009	24,724,128	8,957,967	4,529,732	1,383,882	7,470,009	420,161	11,002,227	3,136,369	23,610,611	6,515,665
2010	24,771,928	8,969,461	4,537,794	1,375,353	7,483,303	420,961	11,019,976	3,142,376	24,641,639	6,500,010
2011	24,863,868	9,005,950	4,565,279	1,391,907	7,528,636	422,490	11,054,623	3,153,894	24,942,229	6,565,179
2012	24,982,681	9,041,688	4,592,238	1,401,862	7,573,107	424,475	11,107,932	3,168,780	25,117,273	6,608,383
2013	22,395,461	8,185,800	4,089,174	1,276,988	6,729,987	382,050	9,997,307	2,849,612	22,858,705	5,972,861
2014	21,040,348	7,704,802	3,801,601	1,196,175	6,269,681	358,876	9,384,647	2,675,712	21,477,518	5,600,474
2015	20,648,146	7,568,768	3,741,227	1,191,297	6,170,112	352,357	9,227,480	2,626,697	21,394,282	5,557,293
2016	20,304,923	7,436,400	3,659,449	1,155,678	6,035,226	346,602	9,088,360	2,583,496	20,752,538	5,407,281
2017	20,007,027	7,296,876	3,603,033	1,146,801	5,942,191	341,476	8,951,488	2,545,152	20,599,868	5,354,355
2018	19,782,279	7,095,730	3,557,993	1,137,533	5,867,905	337,459	8,855,126	2,515,490	20,405,924	5,297,863
2019	19,487,608	6,899,662	3,485,975	1,114,225	5,749,133	332,114	8,715,168	2,476,466	19,922,200	5,174,861
2020	19,190,477	6,742,872	3,409,938	1,096,461	5,623,737	325,927	8,551,371	2,432,325	19,546,793	5,069,720
2021	18,698,238	6,496,234	3,256,130	1,044,018	5,370,057	316,583	8,259,640	2,365,286	18,537,698	4,817,026
2022	18,571,561	6,389,348	3,199,150	1,023,867	5,276,088	314,204	8,150,988	2,348,214	18,076,494	4,706,609
2023	18,672,680	6,464,940	3,221,046	1,034,271	5,312,161	315,876	8,188,712	2,360,930	18,237,267	4,741,918
2024	18,424,918	6,256,867	3,155,945	1,010,705	5,204,864	311,429	8,068,577	2,328,302	17,733,629	4,620,769
2025	17,628,761	5,847,091	2,976,013	960,913	4,908,210	297,658	7,691,642	2,226,066	16,725,467	4,356,369
2026	17,291,515	5,650,362	2,894,557	938,375	4,773,932	291,740	7,524,333	2,182,390	16,231,893	4,227,953
2027	17,118,831	5,545,416	2,848,602	922,424	4,698,163	288,711	7,435,214	2,160,002	15,903,303	4,147,100
2028	16,968,027	5,474,558	2,820,046	919,441	4,651,077	286,166	7,363,038	2,140,969	15,842,353	4,122,345
2029	16,956,944	5,452,559	2,816,744	918,134	4,645,634	285,968	7,357,431	2,139,537	15,817,225	4,116,422
2030	16,950,311	5,406,269	2,815,657	920,056	4,643,833	285,858	7,347,982	2,138,724	15,854,728	4,122,418
2031	16,817,574	5,304,802	2,792,245	916,814	4,605,227	283,581	7,297,954	2,121,748	15,788,031	4,100,075
2032	16,831,084	5,273,711	2,785,231	906,110	4,593,659	283,802	7,301,237	2,123,422	15,598,985	4,063,795
2033	16,754,755	5,232,452	2,772,242	904,131	4,572,237	282,515	7,271,554	2,113,784	15,562,767	4,051,287
2034	16,641,567	5,201,567	2,752,055	899,642	4,538,941	280,614	7,226,000	2,099,527	15,481,553	4,026,230
2035	16,594,339	5,173,295	2,750,881	907,130	4,537,020	279,726	7,210,468	2,093,687	15,607,212	4,046,678
TOTAL	982,460,670	378,031,351	213,537,499	57,360,253	351,406,412	17,503,991	440,806,191	129,924,656	990,573,549	271,308,478

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	692,054	0	777,256	0	0	0	0	55,823	1,624,120
1964	21,774	1,262,657	9,394	1,596,201	0	0	0	0	84,094	2,781,487
1965	21,903	2,184,191	17,795	2,707,393	0	0	405	405	129,191	4,771,055
1966	38,026	3,906,499	33,480	4,842,614	0	0	565	565	148,545	7,339,169
1967	71,397	7,706,041	68,264	9,513,078	0	0	563	563	204,922	12,939,854
1968	129,106	15,340,767	143,015	18,700,105	0	1,050	1,440	2,490	279,614	25,319,617
1969	199,064	23,187,849	215,531	28,210,214	0	1,225	4,125	5,350	349,609	36,600,827
1970	290,069	30,663,254	274,014	37,567,838	0	3,848	17,139	20,987	386,703	48,051,378
1971	409,939	40,018,151	342,929	49,214,310	0	4,546	19,212	23,758	376,266	61,205,957
1972	537,899	55,061,766	422,865	67,596,316	0	4,929	21,178	26,107	401,782	83,459,375
1973	588,712	59,664,622	436,221	73,237,458	0	7,059	21,805	28,864	376,261	88,384,038
1974	612,193	66,085,115	456,154	80,654,916	0	8,336	22,436	30,772	399,238	97,318,819
1975	645,411	71,908,292	479,000	87,372,704	0	9,416	23,550	32,966	408,459	106,208,267
1976	669,123	74,986,803	476,191	91,513,259	0	7,004	23,284	30,288	431,049	112,436,251
1977	697,337	73,419,133	507,675	90,261,427	0	16,917	24,087	41,004	423,790	111,044,590
1978	709,872	82,032,783	523,800	100,084,642	0	12,635	24,252	36,887	427,038	124,072,349
1979	713,699	83,682,037	527,040	102,931,039	0	16,575	28,379	44,954	447,078	130,060,162
1980	863,131	93,120,105	584,295	114,619,524	0	19,834	26,589	46,423	507,904	144,478,024
1981	947,282	111,864,391	672,963	136,724,281	0	21,682	34,591	56,273	517,313	174,613,157
1982	1,022,329	117,213,417	728,486	142,934,325	0	16,117	43,025	59,142	513,675	184,002,322
1983	1,077,376	119,098,228	850,115	147,522,114	0	15,202	27,088	42,290	553,364	185,773,878
1984	1,212,973	157,340,313	933,604	193,667,755	20,590	15,442	28,701	64,733	562,188	246,342,666
1985	1,294,095	195,562,384	999,594	238,015,446	24,050	16,976	32,143	73,169	682,339	302,213,629
1986	1,347,931	218,613,251	1,060,163	264,396,390	31,753	18,145	33,432	83,330	620,998	334,770,013
1987	1,375,512	204,347,286	1,049,412	251,253,460	37,071	17,794	33,618	88,483	685,543	323,760,766
1988	1,471,612	222,175,153	1,126,593	269,801,455	48,058	19,117	35,688	102,863	708,963	346,543,273
1989	1,511,121	230,641,959	1,232,038	280,303,687	61,184	20,809	38,088	120,081	767,516	360,914,072
1990	1,630,195	276,509,066	1,847,899	332,658,104	66,041	20,855	38,739	125,635	818,952	414,073,420
1991	1,735,991	222,035,941	1,547,694	269,271,721	180,212	22,526	41,303	244,041	566,040	339,028,398
1992	1,808,069	246,355,679	1,502,876	298,970,218	208,216	26,028	45,671	279,915	910,480	386,186,096
1993	1,966,457	218,903,572	1,541,908	273,767,942	209,613	26,203	46,514	282,330	985,182	370,086,727
1994	2,054,360	262,640,107	1,492,426	324,558,464	201,284	25,161	46,886	273,331	977,243	420,562,348
1995	2,116,472	228,261,369	1,554,412	289,724,732	216,944	27,118	50,353	294,415	897,419	396,875,293
1996	2,138,082	253,803,352	1,679,961	331,165,301	217,250	27,156	52,014	296,420	998,221	450,713,076
1997	1,932,975	297,435,983	2,914,559	387,969,106	256,228	32,029	60,713	348,970	988,534	536,647,408
1998	3,772,105	304,491,228	2,811,428	392,185,194	255,597	31,950	61,682	349,229	992,231	539,233,649
1999	3,840,837	306,099,024	2,688,375	391,031,248	255,271	31,909	62,720	349,900	1,010,948	536,192,567
2000	3,944,822	340,406,369	2,707,853	425,898,423	254,326	31,791	63,840	349,957	1,012,759	570,777,932
2001	3,941,576	382,311,110	3,417,663	477,422,823	253,982	617,247	65,097	936,326	1,013,666	625,123,553
2002	4,076,885	382,281,170	3,408,049	477,554,639	253,481	617,185	66,319	936,985	1,013,873	624,959,307
2003	4,161,509	374,790,432	3,342,389	468,705,233	253,161	617,145	67,581	937,887	1,013,979	615,158,959
2004	4,212,240	379,315,585	3,385,348	474,035,748	253,845	617,230	69,073	940,148	1,014,103	621,243,081
2005	4,236,133	368,644,943	3,277,819	463,633,937	253,589	617,198	70,351	941,138	1,013,510	609,573,237
2006	4,298,641	369,810,613	3,288,872	465,195,046	253,370	617,171	71,858	942,399	1,013,565	611,242,970
2007	4,585,760	371,613,061	3,305,484	467,523,576	253,219	617,152	73,383	943,754	1,013,645	613,768,541
2008	4,669,422	387,191,960	3,451,556	486,818,411	253,152	617,144	74,926	945,222	1,013,719	635,107,122
2009	4,663,978	388,911,979	3,470,174	488,796,882	253,270	617,158	76,511	946,939	1,013,794	637,347,489
2010	4,838,575	389,395,491	3,475,648	490,572,515	253,376	617,172	78,094	948,642	1,013,875	639,302,182
2011	4,875,296	391,343,710	3,491,694	493,204,755	253,460	617,182	79,894	950,536	1,013,930	642,170,402
2012	4,895,269	393,511,806	3,508,849	495,934,343	253,560	617,195	81,698	952,453	1,014,005	645,183,341
2013	4,661,413	351,634,864	3,115,328	444,149,550	253,646	617,205	83,720	954,571	971,016	587,215,616
2014	4,513,389	328,390,018	2,897,522	415,310,763	253,756	617,219	85,750	956,725	944,136	555,389,046
2015	4,679,111	323,177,668	2,839,187	409,173,625	253,866	617,233	87,596	958,695	914,122	547,746,089
2016	4,592,639	316,560,936	2,785,037	400,708,565	253,995	617,249	89,691	960,935	897,131	538,437,370
2017	4,565,214	311,589,205	2,735,837	394,678,523	254,167	617,270	89,734	961,171	857,167	531,809,495
2018	4,529,723	305,443,205	2,674,397	387,500,627	254,279	617,284	89,756	961,319	781,719	524,179,199
2019	4,453,009	297,959,050	2,607,572	378,377,043	254,441	617,305	87,162	958,908	717,742	514,752,503
2020	4,556,648	291,270,534	2,552,105	370,368,908	254,605	617,325	75,252	947,182	697,434	506,660,250
2021	4,434,706	279,016,807	2,456,827	355,069,250	254,804	617,350	74,470	946,624	693,487	490,886,950
2022	4,365,589	272,172,865	2,419,879	347,014,856	255,058	617,382	73,140	945,580	692,850	482,874,514
2023	4,386,397	273,360,021	2,444,198	348,740,417	260,354	618,044	74,351	952,749	692,174	486,032,067
2024	4,313,597	265,935,767	2,384,678	339,750,047	248,845	616,605	71,718	937,168	691,761	474,037,399
2025	4,156,555	249,323,415	2,246,123	319,344,283	229,907	614,238	67,383	911,528	690,293	447,815,456
2026	4,080,219	241,950,780	2,183,844	310,221,893	219,599	612,949	65,025	897,573	689,862	435,445,861
2027	4,031,304	237,486,590	2,150,468	304,736,128	214,192	612,273	63,786	890,251	689,016	428,400,832
2028	4,017,397	234,797,480	2,122,649	301,525,546	213,718	612,214	63,676	889,608	687,849	424,768,557
2029	4,013,648	234,004,477	2,114,419	300,639,142	213,718	612,214	63,674	889,606	686,376	423,846,891
2030	4,017,755	233,004,319	2,097,871	299,605,781	213,718	612,214	63,673	889,605	685,024	422,789,158
2031	4,004,506	229,349,984	2,060,052	295,442,593	213,718	612,214	63,672	889,604	681,988	418,454,159
2032	3,980,650	228,297,448	2,048,720	294,087,854	213,718	612,214	63,670	889,602	682,333	417,088,959
2033	3,973,208	226,940,774	2,033,575	292,465,281	213,718	612,214	63,670	889,602	681,515	415,395,185
2034	3,958,103	225,335,740	2,022,333	290,463,872	213,718	612,214	63,669	889,601	677,826	413,195,122
2035	3,971,988	225,527,373	2,014,797	290,714,594	213,718	612,214	63,667	889,599	673,602	413,189,478
TOTAL	197,131,303	16,080,371,371	132,290,985	20,242,706,709	11,010,411	22,128,206	3,698,508	36,837,125	50,849,361	27,038,051,906

TABLE B-24

Equivalent Unit Charge for Water Supply for Each Contractor (a

(Dollars per Acre-Foot)

Project Service Area and Water Supply Contractor	Transportation Charge					Delta Water Charge (6)	Water System Revenue Bond Surcharge (7)	Total Equivalent Unit Charge (8)
	Capital Cost Component (1)	Minimum OMP&R Component (2)	Off-Aqueduct Component (3)	Variable OMP&R Component (4)	Total (5)			
Feather River Area								
City of Yuba City	0.00	0.00	0.00	0.00	0.00	30.10	3.65	33.75
County of Butte	0.00	0.00	0.00	0.00	0.00	12.76	1.55	14.31
Plumas County Flood Control and Water Conservation D	17.63	2.28	0.00	0.00	19.91	19.91	6.77	46.59
Feather River Area	1.23	0.16	0.00	0.00	1.39	16.48	2.30	20.17
North Bay Area								
Napa County Flood Control and Water Conservation District	115.06	36.20	4.65	7.30	163.21	13.91	30.07	207.19
Solano County Water Agency	84.95	29.61	4.90	5.76	125.22	21.26	23.54	170.02
North Bay Area	96.61	32.16	4.80	6.36	139.93	18.42	26.07	184.42
South Bay Area								
Alameda County Flood Control and Water Conservation District	17.37	28.10	9.32	15.59	70.38	20.51	6.78	97.67
Alameda County Water District	19.16	23.41	7.75	13.27	63.59	18.24	6.94	88.77
Santa Clara Valley Water District	18.00	17.50	6.66	10.75	52.91	13.93	6.13	72.97
South Bay Area	18.11	20.20	7.27	11.96	57.54	15.73	6.38	79.65
San Joaquin Valley Area								
County of Kings	4.21	3.79	3.84	5.25	17.09	17.09	3.11	37.29
Dudley Ridge Water District	4.94	4.39	3.08	4.73	17.14	15.06	3.05	35.25
Empire West Side Irrigation District	2.67	3.62	2.54	4.35	13.18	15.50	2.54	31.22
Kern County Water Agency	8.93	8.92	4.68	6.58	29.11	17.50	4.33	50.94
Oak Flat Water District	2.17	2.38	2.23	3.39	10.17	16.06	2.49	28.72
Tulare Lake Basin Water Storage District	5.16	4.61	3.20	4.89	17.86	15.65	3.17	36.68
San Joaquin Valley Area	8.28	8.19	4.43	6.29	27.19	17.17	4.13	48.49
Central Coastal Area								
San Luis Obispo County Flood Control and Water Conservation District	338.22	73.10	15.85	42.91	470.08	36.78	87.90	594.76
Santa Barbara County Flood Control and Water Conservation District	410.60	70.03	21.69	42.93	545.25	32.48	105.23	682.96
Central Coastal Area	386.93	71.03	19.78	42.92	520.66	33.89	99.56	654.11
Southern California Area								
Antelope Valley-East Kern Water Agency	35.10	30.76	25.82	54.60	146.28	23.54	11.52	181.34
Castaic Lake Water Agency	47.88	34.46	23.36	18.47	124.17	21.78	14.46	160.41
Coachella Valley Water District	42.78	36.02	50.69	37.36	166.85	18.73	12.83	198.41
Crestline-Lake Arrowhead Water Agency	83.02	62.54	36.68	63.78	246.02	29.54	24.07	299.63
Desert Water Agency	43.48	36.61	50.52	37.64	168.25	18.81	13.01	200.07
Littlerock Creek Irrigation District	41.87	35.49	32.30	58.52	168.18	27.29	13.64	209.11
Mojave Water Agency	71.49	62.07	32.93	74.15	240.64	34.88	21.87	297.39
Palmdale Water District	46.69	39.84	36.69	64.22	187.44	33.06	15.53	236.03
San Bernardino Valley Municipal Water District	119.44	88.50	27.85	43.08	278.87	38.53	34.14	351.54
San Gabriel Valley Municipal Water District	81.82	62.16	35.20	37.77	216.95	28.02	23.59	268.56
San Gorgonio Pass Water Agency	220.70	166.93	15.98	55.47	459.08	63.07	62.10	584.25
The Metropolitan Water District of Southern Californ	64.21	45.18	32.00	29.47	170.86	24.68	18.84	214.38
Ventura County Flood Control District	77.15	54.63	21.46	45.97	199.21	29.65	22.63	251.49
Southern California Area	63.78	45.85	31.91	32.36	173.90	25.11	18.78	217.79
All Areas	40.55	28.50	18.43	19.94	107.42	21.18	12.57	141.17

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, 4.620 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)	Off-Aqueduct Costs (4)	Variable OMP&R (5)	Total (6)	Capital Costs (7)	Water System Revenue Bond Surcharge (c (8)	Minimum OMP&R (9)	Off-Aqueduct Costs (10)	Variable OMP&R (11)	Total (12)
North Bay Aqueduct												
1	42.53	10.49	13.03	2.41	2.18	70.64	42.53	10.49	13.03	2.41	2.18	70.64
2	46.04	11.36	5.73	0.00	0.00	63.13	88.57	21.85	18.76	2.41	2.18	133.77
3A	9.35	2.31	12.92	5.48	3.40	33.46	97.92	24.16	31.68	7.89	5.58	167.23
3B	47.89	11.81	23.86	5.64	4.99	94.19	136.46	33.66	42.62	8.05	7.17	227.96
South Bay Aqueduct												
1	6.57	1.62	13.37	10.89	8.26	40.71	8.42	2.08	16.08	14.43	12.05	53.06
2	0.62	0.15	1.54	0.00	0.00	2.31	9.04	2.23	17.62	14.43	12.05	55.37
4	2.08	0.51	2.52	0.00	0.00	5.11	11.12	2.74	20.14	14.43	12.05	60.48
5	4.42	1.09	2.08	0.00	0.00	7.59	15.54	3.83	22.22	14.43	12.05	68.07
6	0.25	0.06	0.23	0.00	0.00	0.54	15.79	3.89	22.45	14.43	12.05	68.61
7	1.95	0.48	0.41	0.00	0.00	2.84	17.74	4.37	22.86	14.43	12.05	71.45
8	2.64	0.65	0.45	0.00	0.00	3.74	20.38	5.02	23.31	14.43	12.05	75.19
9	5.49	1.35	2.35	0.00	0.00	9.19	25.87	6.37	25.66	14.43	12.05	84.38
California Aqueduct												
1	1.85	0.46	2.71	3.54	3.79	12.35	1.85	0.46	2.71	3.54	3.79	12.35
2A	1.17	0.29	0.53	0.00	0.00	1.99	3.02	0.75	3.24	3.54	3.79	14.34
2B	0.59	0.15	0.22	0.00	0.00	0.96	3.61	0.90	3.46	3.54	3.79	15.30
3	0.52	0.13	0.20	0.00	0.00	0.85	4.13	1.03	3.66	3.54	3.79	16.15
4	0.83	0.20	1.32	1.65	1.65	5.65	4.96	1.23	4.98	5.19	5.44	21.80
5	0.64	0.16	0.27	0.00	0.00	1.07	5.60	1.39	5.25	5.19	5.44	22.87
6	0.17	0.04	0.13	0.00	0.00	0.34	5.77	1.43	5.38	5.19	5.44	23.21
7	0.73	0.18	0.32	0.00	0.00	1.23	6.50	1.61	5.70	5.19	5.44	24.44
8C	0.02	0.00	0.06	0.00	0.00	0.08	6.52	1.61	5.76	5.19	5.44	24.52
8D	0.37	0.09	0.25	0.00	0.00	0.71	6.89	1.70	6.01	5.19	5.44	25.23
9	0.30	0.07	0.23	0.00	0.00	0.60	7.19	1.77	6.24	5.19	5.44	25.83
10A	0.32	0.08	0.28	0.00	0.00	0.68	7.51	1.85	6.52	5.19	5.44	26.51
11B	0.47	0.12	0.20	0.00	0.00	0.79	7.98	1.97	6.72	5.19	5.44	27.30
12D	0.45	0.11	0.18	0.00	0.00	0.74	8.43	2.08	6.90	5.19	5.44	28.04
12E	0.31	0.08	0.30	0.00	0.00	0.69	8.74	2.16	7.20	5.19	5.44	28.73
13B	0.68	0.17	0.35	0.00	0.00	1.20	9.42	2.33	7.55	5.19	5.44	29.93
14A	2.62	0.65	2.67	2.74	3.13	11.81	12.04	2.98	10.22	7.93	8.57	41.74
14B	0.41	0.10	0.33	0.00	0.00	0.84	12.45	3.08	10.55	7.93	8.57	42.58
14C	0.35	0.09	0.25	0.00	0.00	0.69	12.80	3.17	10.80	7.93	8.57	43.27
15A	1.94	0.48	2.83	3.29	3.85	12.39	14.74	3.65	13.63	11.22	12.42	55.66
16A	3.17	0.78	4.37	7.09	8.37	23.78	17.91	4.43	18.00	18.31	20.79	79.44
17E	10.76	2.65	12.28	24.77	29.78	80.24	28.67	7.08	30.28	43.08	50.57	159.68
17F	2.81	0.69	0.10	0.00	0.00	3.60	31.48	7.77	30.38	43.08	50.57	163.28
18A	2.67	0.66	1.42	0.00	-3.10	1.65	34.15	8.43	31.80	43.08	47.47	164.93
19	1.97	0.49	0.90	0.00	0.00	3.36	36.12	8.92	32.70	43.08	47.47	168.29
19C	0.00	0.00	0.00	0.00	0.00	0.00	36.12	8.92	32.70	43.08	47.47	168.29
20A	1.60	0.39	1.23	0.00	0.00	3.22	37.72	9.31	33.93	43.08	47.47	171.51
20B	1.90	0.47	0.91	0.00	0.00	3.28	39.62	9.78	34.84	43.08	47.47	174.79
21	0.95	0.23	0.68	0.00	0.00	1.86	40.57	10.01	35.52	43.08	47.47	176.65
22A	0.97	0.24	0.36	0.00	0.00	1.57	41.54	10.25	35.88	43.08	47.47	178.22
22B	9.66	2.38	9.43	7.83	9.22	38.52	51.20	12.63	45.31	50.91	56.69	216.74
23	2.52	0.62	1.02	0.00	-3.06	1.10	53.72	13.25	46.33	50.91	53.63	217.84
24	5.04	1.24	1.81	0.00	0.00	8.09	58.76	14.49	48.14	50.91	53.63	225.93
25	3.77	0.93	0.09	0.00	0.00	4.79	62.53	15.42	48.23	50.91	53.63	230.72
26A	6.13	1.51	5.67	0.00	-24.05	(10.74)	68.66	16.93	53.90	50.91	29.58	219.98
28G	6.53	1.61	1.95	0.00	0.00	10.09	75.19	18.54	55.85	50.91	29.58	230.07
28H	6.30	1.55	1.96	0.00	0.00	9.81	81.49	20.09	57.81	50.91	29.58	239.88
28J	79.77	19.68	34.21	0.00	0.00	133.66	161.26	39.77	92.02	50.91	29.58	373.54
West Branch												
29A	3.36	0.83	6.26	3.11	3.85	17.41	34.84	8.60	36.64	46.19	54.42	180.69
29F	2.48	0.61	0.70	0.00	0.00	3.79	37.32	9.21	37.34	46.19	54.42	184.48
29G	8.31	2.05	3.44	0.00	-12.57	1.23	45.63	11.26	40.78	46.19	41.85	185.71
29H	5.14	1.27	3.26	0.00	0.00	9.67	50.77	12.53	44.04	46.19	41.85	195.38
29J	8.64	2.13	0.84	0.00	-22.75	(11.14)	59.41	14.66	44.88	46.19	19.10	184.24
30	13.83	3.41	2.51	0.00	0.00	19.75	73.24	18.07	47.39	46.19	19.10	203.99
Coastal Branch												
31A	6.70	1.65	17.11	3.38	2.62	31.46	13.59	3.35	23.12	8.57	8.06	56.69
33A	162.27	40.03	9.46	18.65	27.53	257.94	175.86	43.38	32.58	27.22	35.59	314.63
34	77.16	19.03	0.00	0.00	0.00	96.19	253.02	62.41	32.58	27.22	35.59	410.82
35	25.70	6.34	0.00	0.00	0.00	32.04	278.72	68.75	32.58	27.22	35.59	442.86

a) Representative of transportation unit costs only; does not include a unit cost of conservation. The Delta Water Rate should be added to these values in order to approximate unit costs at canalside. Includes surplus water prior to May 1, 1973.

b) Hypothetical charges which, if assessed on all entitlement water delivered to date, all surplus water delivered prior to May 1, 1973, and all entitlement water now estimated to be delivered during the remainder of the Project repayment period (Table B-5B), would provide a sum at the end of the period financially equivalent to all Transportation Charges required under the water supply contract considering interest rate at the Project Interest Rate of 4.620 percent per annum.

c) The Water System Revenue Bond Surcharge equivalent unit rate is calculated by dividing the WSRB surcharge for 1997 (from 132-96, Table B-22) by the total Transportation Capital (132-96, B-15) and the Capital component of the Delta Water Charge (132-96, B-4 * 10.95817139). This rate is multiplied by the equivalent rate for the Transportation Capital cost (column 1).

TABLE B-26

Capital Costs of Each Aqueduct Reach to Be Reimbursed through the Capital Cost Component of the East Branch Enlargement Transportation Charge

(Dollars)

Calendar Year	California Aqueduct							
	Mojave Division							
	Reach 18A (1)	Reach 19 (2)	Reach 20A (3)	Reach 20B (4)	Reach 21 (5)	Reach 22A (6)	Reach 22B (7)	Reach 23B (8)
1952	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	117,000	0	0	0	0	0	0	0
1980	200,000	0	0	0	0	0	0	74,000
1981	135,000	0	0	0	0	0	0	385,000
1982	1,503,000	0	0	0	0	0	0	1,586,000
1983	2,260,000	0	0	0	0	0	0	2,965,000
1984	735,000	0	0	0	0	0	796,000	1,380,000
1985	93,000	435,000	75,000	544,000	859,000	703,000	967,000	146,000
1986	784,000	4,477,000	3,144,000	2,234,000	1,569,000	1,203,000	1,798,000	34,000
1987	11,000	951,000	1,076,000	666,000	399,000	47,000	16,404,000	43,000
1988	1,000	125,000	1,681,000	1,730,000	2,024,000	40,000	13,307,000	70,000
1989	0	206,000	2,089,000	2,174,000	2,510,000	61,000	11,231,000	229,000
1990	1,000	577,000	903,000	735,000	928,000	194,000	20,132,000	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	2,748,000
1996	0	0	0	0	0	0	1,483,000	0
1997	0	0	0	0	0	0	96,000	0
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
TOTAL	5,841,000	7,112,000	9,441,000	8,476,000	8,762,000	2,363,000	99,860,000	38,308,000

TABLE B-26

Capital Costs of Each Aqueduct Reach to Be Reimbursed through the Capital Cost Component of the East Branch Enlargement Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)							Grand Total (16)
	Mojave Division (continued)			Santa Ana Division				
	Reach 23C (9)	Reach 24 (10)	Total (11)	Reach 25 (12)	Reach 26A (13)	Reach 26B (14)	Total (15)	
1952	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	117,000	0	0	0	0	117,000
1980	0	0	274,000	0	0	0	0	274,000
1981	0	0	520,000	0	0	0	0	520,000
1982	0	0	3,089,000	0	0	0	0	3,089,000
1983	0	0	5,225,000	0	0	0	0	5,225,000
1984	0	0	2,911,000	0	0	0	0	2,911,000
1985	0	0	3,822,000	0	528,000	89,000	617,000	4,439,000
1986	25,000	0	15,268,000	0	1,926,000	154,000	2,080,000	17,348,000
1987	178,000	0	19,775,000	0	3,699,000	437,000	4,136,000	23,911,000
1988	632,000	0	19,610,000	0	5,350,000	3,329,000	8,679,000	28,289,000
1989	1,130,000	0	19,630,000	0	40,512,000	1,650,000	42,162,000	61,792,000
1990	2,066,000	0	26,423,000	0	29,456,000	1,650,000	31,106,000	57,529,000
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	16,397,000	299,000	16,696,000	42,102,000
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	5,853,000	0	8,824,000	0	1,753,000	0	1,753,000	10,577,000
1996	529,000	0	2,012,000	0	4,280,000	0	4,280,000	6,292,000
1997	1,208,000	0	1,304,000	0	0	0	0	1,304,000
1998	6,000	0	6,000	0	0	0	0	6,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
TOTAL	51,911,000	0	232,074,000	0	137,957,000	8,607,000	146,564,000	378,638,000

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	1,112,319	0
1998	0	0	0	0	0	0	1,051,608	0
1999	0	0	0	0	0	0	1,067,265	0
2000	0	0	0	0	0	0	1,067,265	0
2001	0	0	0	0	0	0	1,067,265	0
2002	0	0	0	0	0	0	1,067,265	0
2003	0	0	0	0	0	0	1,067,265	0
2004	0	0	0	0	0	0	1,067,265	0
2005	0	0	0	0	0	0	1,067,265	0
2006	0	0	0	0	0	0	1,067,265	0
2007	0	0	0	0	0	0	1,067,265	0
2008	0	0	0	0	0	0	1,067,265	0
2009	0	0	0	0	0	0	1,067,265	0
2010	0	0	0	0	0	0	1,067,265	0
2011	0	0	0	0	0	0	1,067,265	0
2012	0	0	0	0	0	0	1,067,265	0
2013	0	0	0	0	0	0	1,067,265	0
2014	0	0	0	0	0	0	1,067,265	0
2015	0	0	0	0	0	0	1,067,265	0
2016	0	0	0	0	0	0	1,067,265	0
2017	0	0	0	0	0	0	1,067,265	0
2018	0	0	0	0	0	0	1,067,265	0
2019	0	0	0	0	0	0	1,067,265	0
2020	0	0	0	0	0	0	1,067,265	0
2021	0	0	0	0	0	0	1,067,265	0
2022	0	0	0	0	0	0	1,067,265	0
2023	0	0	0	0	0	0	1,067,265	0
2024	0	0	0	0	0	0	1,067,265	0
2025	0	0	0	0	0	0	1,067,265	0
2026	0	0	0	0	0	0	1,067,265	0
2027	0	0	0	0	0	0	1,067,265	0
2028	0	0	0	0	0	0	1,067,265	0
2029	0	0	0	0	0	0	1,067,265	0
2030	0	0	0	0	0	0	1,067,265	0
2031	0	0	0	0	0	0	1,067,265	0
2032	0	0	0	0	0	0	1,067,265	0
2033	0	0	0	0	0	0	1,067,265	0
2034	0	0	0	0	0	0	1,067,265	0
2035	0	0	0	0	0	0	1,067,265	0
TOTAL	0	0	0	0	0	0	44,037,532	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 (a

(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 (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	558,189	0	1,670,508	0	1,491,887	0	1,491,887	3,162,395
1998	574,726	0	1,626,334	0	1,538,734	0	1,538,734	3,165,068
1999	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2000	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2001	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2002	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2003	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2004	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2005	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2006	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2007	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2008	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2009	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2010	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2011	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2012	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2013	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2014	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2015	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2016	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2017	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2018	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2019	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2020	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2021	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2022	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2023	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2024	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2025	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2026	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2027	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2028	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2029	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2030	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2031	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2032	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2033	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2034	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
2035	583,283	0	1,650,548	0	1,561,645	0	1,561,645	3,212,193
TOTAL	23,639,386	0	67,676,918	0	63,465,886	0	63,465,886	131,142,804

TABLE B-28

Capital Costs of East Branch Enlargement Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	Southern California Area							
	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	446,964	65,747	346,990	4,514	21,614	3,503,496	4,439,000
1986	185,353	1,756,627	236,237	1,362,679	41,900	78,842	13,686,362	17,348,000
1987	49,735	2,453,568	378,388	1,772,906	10,615	151,421	19,094,367	23,911,000
1988	124,534	2,648,293	483,205	1,710,708	13,783	219,006	23,089,471	28,289,000
1989	155,446	7,070,963	2,403,112	1,670,091	17,419	1,658,386	48,816,583	61,792,000
1990	62,786	6,409,543	1,922,516	2,234,542	8,680	1,205,801	45,685,132	57,529,000
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	4,962,202	1,669,167	1,359,335	471	671,222	33,436,692	42,102,000
1993	1,205	5,094,237	1,828,410	2,722,156	212	199,684	33,380,096	43,226,000
1994	273	1,726,376	631,816	478,543	27	128,988	11,255,977	14,222,000
1995	0	1,288,547	477,450	370,535	0	71,760	8,368,708	10,577,000
1996	0	753,109	268,104	134,459	0	175,205	4,961,123	6,292,000
1997	0	162,849	56,611	8,704	0	0	1,075,836	1,304,000
1998	0	761	277	0	0	0	4,962	6,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
TOTAL	660,604	42,323,319	12,603,178	17,674,143	121,366	5,647,362	299,608,028	378,638,000

TABLE B-29

Capital Cost Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area							
	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)*	*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	18,856	1,208,050	359,737	504,480	3,464	0	8,551,823	10,646,410
1989	19,815	1,269,488	378,032	530,136	3,640	0	8,986,748	11,187,859
1990	19,810	1,269,194	377,945	530,013	3,640	0	8,984,662	11,185,264
1991	19,807	1,268,956	377,874	529,914	3,639	0	8,982,974	11,183,164
1992	41,706	2,671,973	795,669	1,115,811	7,662	0	18,914,979	23,547,800
1993	43,333	2,776,250	826,721	1,159,357	7,961	0	19,653,158	24,466,780
1994	43,115	2,762,308	822,569	1,153,535	7,921	0	19,554,462	24,343,910
1995	46,954	3,008,258	895,809	1,256,243	8,627	0	21,295,544	26,511,435
1996	59,194	3,792,430	1,129,322	1,583,712	10,875	0	26,846,722	33,422,255
1997	65,086	4,169,912	1,241,730	1,741,348	11,958	0	29,518,932	36,748,966
1998	64,891	4,157,419	1,238,010	1,736,131	11,922	0	29,430,492	36,638,865
1999	64,778	4,150,162	1,235,849	1,733,100	11,901	0	29,379,116	36,574,906
2000	66,384	4,253,046	1,266,486	1,776,065	12,196	0	30,107,442	37,481,619
2001	66,354	4,251,113	1,265,911	1,775,257	12,191	0	30,093,755	37,464,581
2002	65,863	4,219,718	1,256,562	1,762,147	12,101	0	29,871,508	37,187,899
2003	65,806	4,216,061	1,255,473	1,760,620	12,090	0	29,845,619	37,155,669
2004	63,261	4,052,994	1,206,914	1,692,523	11,622	0	28,691,262	35,718,576
2005	63,231	4,051,066	1,206,340	1,691,718	11,617	0	28,677,612	35,701,584
2006	63,235	4,051,326	1,206,417	1,691,827	11,618	0	28,679,460	35,703,883
2007	63,286	4,054,616	1,207,397	1,693,201	11,627	0	28,702,749	35,732,876
2008	63,359	4,059,240	1,208,774	1,695,131	11,640	0	28,735,479	35,773,623
2009	63,458	4,065,577	1,210,661	1,697,778	11,659	0	28,780,337	35,829,470
2010	63,587	4,073,868	1,213,130	1,701,240	11,682	0	28,839,036	35,902,543
2011	63,698	4,080,978	1,215,247	1,704,209	11,703	0	28,889,365	35,965,200
2012	63,809	4,088,076	1,217,361	1,707,173	11,723	0	28,939,613	36,027,755
2013	63,916	4,094,951	1,219,408	1,710,044	11,743	0	28,988,281	36,088,343
2014	64,026	4,101,998	1,221,507	1,712,987	11,763	0	29,038,163	36,150,444
2015	64,134	4,108,908	1,223,564	1,715,872	11,783	0	29,087,078	36,211,339
2016	64,260	4,117,012	1,225,977	1,719,257	11,806	0	29,144,448	36,282,760
2017	64,419	4,127,143	1,228,994	1,723,488	11,835	0	29,216,167	36,372,046
2018	64,583	4,137,702	1,232,139	1,727,897	11,865	0	29,290,917	36,465,103
2019	64,751	4,148,461	1,235,343	1,732,390	11,896	0	29,367,082	36,559,923
2020	64,944	4,160,817	1,239,022	1,737,550	11,932	0	29,454,549	36,668,814
2021	65,177	4,175,760	1,243,472	1,743,790	11,975	0	29,560,330	36,800,504
2022	65,446	4,192,964	1,248,595	1,750,974	12,024	0	29,682,115	36,952,118
2023	52,384	3,356,137	999,402	1,401,517	9,624	0	23,758,190	29,577,254
2024	53,856	3,450,458	1,027,489	1,440,905	9,895	0	24,425,895	30,408,498
2025	41,755	2,675,118	796,606	1,117,125	7,671	0	18,937,239	23,575,514
2026	16,935	1,084,963	323,084	453,079	3,111	0	7,680,486	9,561,658
2027	11,339	726,442	216,322	303,361	2,083	0	5,142,506	6,402,053
2028	8,643	553,749	164,897	231,245	1,588	0	3,920,004	4,880,126
2029	8,715	558,326	166,260	233,156	1,601	0	3,952,403	4,920,461
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	2,181,959	139,792,988	41,628,021	58,377,306	400,874	0	989,598,702	1,231,979,850

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)

Calendar Year	Southern California Area							
	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	369,849	115,874	100,850	0	61,071	2,514,751	3,162,395
1998	0	371,709	118,638	95,346	0	62,989	2,516,386	3,165,068
1999	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2000	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2001	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2002	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2003	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2004	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2005	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2006	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2007	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2008	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2009	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2010	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2011	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2012	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2013	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2014	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2015	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2016	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2017	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2018	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2019	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2020	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2021	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2022	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2023	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2024	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2025	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2026	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2027	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2028	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2029	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2030	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2031	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2032	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2033	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2034	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2035	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
TOTAL	0	15,389,795	4,895,995	3,992,723	0	2,598,019	104,266,272	131,142,804

TABLE B-31

Total East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area							
	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	18,856	1,208,050	359,737	504,480	3,464	0	8,551,823	10,646,410
1989	19,815	1,269,488	378,032	530,136	3,640	0	8,986,748	11,187,859
1990	19,810	1,269,194	377,945	530,013	3,640	0	8,984,662	11,185,264
1991	19,807	1,268,956	377,874	529,914	3,639	0	8,982,974	11,183,164
1992	41,706	2,671,973	795,669	1,115,811	7,662	0	18,914,979	23,547,800
1993	43,333	2,776,250	826,721	1,159,357	7,961	0	19,653,158	24,466,780
1994	43,115	2,762,308	822,569	1,153,535	7,921	0	19,554,462	24,343,910
1995	46,954	3,330,459	989,171	1,366,494	8,627	49,880	23,524,850	29,316,435
1996	59,194	4,160,475	1,242,495	1,689,683	10,875	58,780	29,359,953	36,581,455
1997	65,086	4,539,761	1,357,604	1,842,198	11,958	61,071	32,033,683	39,911,361
1998	64,891	4,529,128	1,356,648	1,831,477	11,922	62,989	31,946,878	39,803,933
1999	64,778	4,527,405	1,356,253	1,829,865	11,901	63,927	31,932,970	39,787,099
2000	66,384	4,630,289	1,386,890	1,872,830	12,196	63,927	32,661,296	40,693,812
2001	66,354	4,628,356	1,386,315	1,872,022	12,191	63,927	32,647,609	40,676,774
2002	65,863	4,596,961	1,376,966	1,858,912	12,101	63,927	32,425,362	40,400,092
2003	65,806	4,593,304	1,375,877	1,857,385	12,090	63,927	32,399,473	40,367,862
2004	63,261	4,430,237	1,327,318	1,789,288	11,622	63,927	31,245,116	38,930,769
2005	63,231	4,428,309	1,326,744	1,788,483	11,617	63,927	31,231,466	38,913,777
2006	63,235	4,428,569	1,326,821	1,788,592	11,618	63,927	31,233,314	38,916,076
2007	63,286	4,431,859	1,327,801	1,789,966	11,627	63,927	31,256,603	38,945,069
2008	63,359	4,436,483	1,329,178	1,791,896	11,640	63,927	31,289,333	38,985,816
2009	63,458	4,442,820	1,331,065	1,794,543	11,659	63,927	31,334,191	39,041,663
2010	63,587	4,451,111	1,333,534	1,798,005	11,682	63,927	31,392,890	39,114,736
2011	63,698	4,458,221	1,335,651	1,800,974	11,703	63,927	31,443,219	39,177,393
2012	63,809	4,465,319	1,337,765	1,803,938	11,723	63,927	31,493,467	39,239,948
2013	63,916	4,472,194	1,339,812	1,806,809	11,743	63,927	31,542,135	39,300,536
2014	64,026	4,479,241	1,341,911	1,809,752	11,763	63,927	31,592,017	39,362,637
2015	64,134	4,486,151	1,343,968	1,812,637	11,783	63,927	31,640,932	39,423,532
2016	64,260	4,494,255	1,346,381	1,816,022	11,806	63,927	31,698,302	39,494,953
2017	64,419	4,504,386	1,349,398	1,820,253	11,835	63,927	31,770,021	39,584,239
2018	64,583	4,514,945	1,352,543	1,824,662	11,865	63,927	31,844,771	39,677,296
2019	64,751	4,525,704	1,355,747	1,829,155	11,896	63,927	31,920,936	39,772,116
2020	64,944	4,538,060	1,359,426	1,834,315	11,932	63,927	32,008,403	39,881,007
2021	65,177	4,553,003	1,363,876	1,840,555	11,975	63,927	32,114,184	40,012,697
2022	65,446	4,570,207	1,368,999	1,847,739	12,024	63,927	32,235,969	40,164,311
2023	52,384	3,733,380	1,119,806	1,498,282	9,624	63,927	26,312,044	32,789,447
2024	53,856	3,827,701	1,147,893	1,537,670	9,895	63,927	26,979,749	33,620,691
2025	41,755	3,052,361	917,010	1,213,890	7,671	63,927	21,491,093	26,787,707
2026	16,935	1,462,206	443,488	549,844	3,111	63,927	10,234,340	12,773,851
2027	11,339	1,103,685	336,726	400,126	2,083	63,927	7,696,360	9,614,246
2028	8,643	930,992	285,301	328,010	1,588	63,927	6,473,858	8,092,319
2029	8,715	935,569	286,664	329,921	1,601	63,927	6,506,257	8,132,654
2030	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2031	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2032	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2033	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2034	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
2035	0	377,243	120,404	96,765	0	63,927	2,553,854	3,212,193
TOTAL	2,181,959	155,182,783	46,524,016	62,370,029	400,874	2,598,019	1,093,864,974	1,363,122,654

CONVERSION FACTORS

Quantity	To convert from customary unit	To metric unit	Multiply customary unit by	To convert to customary unit, multiply metric unit by
Length	inches (in)	millimeters (mm)*	25.4	0.03937
	inches (in)	centimeters (cm)	2.54	0.3937
	feet (ft)	meters (m)	0.3048	3.2808
	miles (mi)	kilometers (km)	1.6093	0.62139
Area	square inches (in^2)	square millimeters (mm^2)	645.16	0.00155
	square feet (ft^2)	square meters (m^2)	0.092903	10.764
	acres (ac)	hectares (ha)	0.40469	2.4710
	square miles (mi^2)	square kilometers (km^2)	2.590	0.3861
Volume	gallons (gal)	liters (L)	3.7854	0.26417
	million gallons (10^6 gal)	megaliters (ML)	3.7854	0.26417
	cubic feet (ft^3)	cubic meters (m^3)	0.028317	35.315
	cubic yards (yd^3)	cubic meters (m^3)	0.76455	1.308
	acre-feet (ac-ft)	thousand cubic meters ($m^3 \times 10^3$)	1.2335	0.8107
	acre-feet (ac-ft)	hectare-meters (ha – m)▪	0.1234	8.107
	thousand acre-feet (taf)	million cubic meters ($m^3 \times 10^6$)	1.2335	0.8107
	thousand acre-feet (taf)	hectare-meters (ha – m)▪	123.35	0.008107
	million acre-feet (maf)	billion cubic meters ($m^3 \times 10^9$)◆	1.2335	0.8107
	million acre-feet (maf)	cubic kilometers (km^3)	1.2335	0.8107
Flow	cubic feet per second (ft^3/s)	cubic meters per second (m^3/s)	0.028317	35.315
	gallons per minute (gal/min)	liters per minute (L/min)	3.7854	0.26417
	gallons per day (gal/day)	liters per day (L/day)	3.7854	0.26417
	million gallons per day (mgd)	megaliters per day (ML/day)	3.7854	0.26417
	acre-feet per day (ac-ft/day)	thousand cubic meters ($m^3 \times 10^3$/day)	1.2335	0.8107
Mass	pounds (lb)	kilograms (kg)	0.45359	2.2046
	tons (short, 2,000 lb)	megagrams (Mg)	0.90718	1.1023
Velocity	feet per second (ft/s)	meters per second (m/s)	0.3048	3.2808
Power	horsepower (hp)	kilowatts (kW)	0.746	1.3405
Pressure	pounds per square inch (psi)	kilopascals (kPa)	6.8948	0.14505
	feet head of water	kilopascals (kPa)	2.989	0.33456
Specific capacity	gallons per minute per foot of drawdown	liters per minute per meter of draw-down	12.419	0.08052
Concentra-tion	parts per million (ppm)	milligrams per liter (mg/L)	1.0	1.0
Electrical conductivity	micromhos per centimeter	microsiemens per centimeter (μS/cm)	1.0	1.0
Temperature	degrees Fahrenheit (°F)	degrees Celsius (°C)	(°F – 32)/1.8	(1.8 x °C) + 32

* When using "dual units," inches are normally converted to millimeters (rather than centimeters).

▪ Not used often in metric countries, but is offered as a conceptual equivalent of customary western U.S. practice (a standard depth of water over a given area of land).

◆ ASTM Manual E380 discourages the use of billion cubic meters since that magnitude is represented by *giga* (a thousand million) in other countries. It is shown here for potential use for quantifying large reservoir volumes (similar to million acre-feet).

STATE OF CALIFORNIA **THE RESOURCES AGENCY** DEPARTMENT OF WATER RESOURCES