

Environmental Water Account Action Specific Implementation Plan Table of Contents

Acronyms	xii
Glossary.....	Glossary-1
Chapter 1 - Introduction.....	1-1
1.1 Background.....	1-1
1.1.1 Project Overview.....	1-2
1.1.2 Implementing Entities.....	1-3
1.1.3 ASIP Contents	1-3
1.2 ASIP Process	1-4
1.2.1 Informal and Formal Consultation Processes.....	1-6
1.2.2 Current Management Direction.....	1-6
1.2.3 Consultation to Date.....	1-7
1.2.4 Compliance with Federal Endangered Species Act	1-7
1.2.5 Compliance with Magnuson-Stevens Fishery Conservation and Management Act (MSFCA)	1-8
1.2.6 Compliance with California Endangered Species Act and the Natural Community Conservation Planning Act	1-8
1.3 Relationship to CALFED Program and CALFED Documents	1-9
1.3.1 CALFED Program.....	1-9
1.3.2 Programmatic Environmental Impact Statement/Environmental Impact Report and Record of Decision.....	1-11
1.3.3 Programmatic Biological Opinions and Natural Community Conservation Plan.....	1-11
1.3.4 Multi-Species Conservation Strategy	1-12
1.4 Species Addressed in This ASIP	1-14
1.4.1 Identification of Species Analyzed in Detail in the ASIP.....	1-15
1.4.2 Critical Habitat	1-16
1.4.3 Essential Fish Habitat (EFH)	1-16
1.5 NCCP Habitats.....	1-17
1.5.1 Grassland	1-17
1.5.2 Upland Scrub.....	1-17
1.5.3 Valley/Foothill Woodland and Forest	1-17
1.5.4 Montane Woodland and Forest	1-18
1.5.5 Inland Dune Scrub.....	1-18
1.6 Organization of this ASIP	1-18

Chapter 2 Description of the EWA Proposed Action	2-1
2.1 EWA Action Area	2-1
2.2 EWA Program Overview	2-3
2.3 Baseline Level of Fishery Protection.....	2-4
2.3.1 Overview	2-4
2.3.2 Delta Export Pumping Reductions.....	2-7
2.3.3 Delta Cross Channel Gates Closure.....	2-8
2.3.4 Increasing Instream Flows	2-9
2.3.5 Augmenting Delta Outflows	2-10
2.3.6 Non-Flow Related Actions.....	2-11
2.3.7 Water Management.....	2-11
2.3.8 Existing Regulatory Commitments	2-13
2.4 Proposed Action (Flexible Purchase Alternative).....	2-14
2.4.1 EWA Overview.....	2-14
2.4.2 Actions to Protect Fish and Benefit the Environment.....	2-15
2.4.3 Asset Acquisition and Management	2-20
2.4.4 Typical Year EWA Operations	2-44
2.4.5 Acquisition Strategy.....	2-48
2.4.6 EWA Action Effects Monitoring and Adaptive Management	2-50
2.5 Conservation Measures	2-50
2.5.1 Conservation Principles	2-51
2.5.2 Conservation Strategy and Conservation Measures.....	2-52
2.5.3 EWA Conservation Measures	2-53
 Chapter 3 Environmental Baseline – Special Status Species Accounts and Status in Action Area	 3-1
3.1 Introduction to Species Accounts.....	3-1
3.2 Species Accounts for Fish.....	3-2
3.2.1 Central Valley Fall/Late Fall-run Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	3-2
3.2.1 Sacramento River Winter-run Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	3-6
3.2.2 Central Valley Spring-run Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	3-12
3.2.3 Central Valley Steelhead (<i>Oncorhynchus mykiss</i>)	3-17
3.2.4 Delta Smelt (<i>Hypomesus transpacificus</i>).....	3-24
3.2.5 Sacramento Splittail (<i>Pogonichthys macrolepidotus</i>)	3-33
3.2.6 Green Sturgeon (<i>Acipsenser medirostis</i>).....	3-36
3.3 Species Accounts for Birds	3-38
3.3.1 Aleutian Canada Goose (<i>Branta canadensis leucopareia</i>)	3-38
3.3.2 Black Tern (<i>Chlidonias niger</i>)	3-42
3.3.3 Black-crowned Night Heron (<i>Nycticorax nycticorax</i>).....	3-44

3.3.4	Great Blue Heron (<i>Ardea herodias</i>)	3-46
3.3.5	Great Egret (<i>Ardea alba</i>).....	3-48
3.3.6	Greater Sandhill Crane (<i>Grus canadensis tabida</i>)	3-49
3.3.7	Long-billed Curlew (<i>Numenius americanus</i>).....	3-52
3.3.8	Snowy Egret (<i>Egretta Thula</i>)	3-55
3.3.9	Tricolored Blackbird (<i>Agelaius tricolor</i>).....	3-57
3.3.10	White-Faced Ibis (<i>Plegadis chihi</i>)	3-60
3.4	Species Accounts for Reptiles.....	3-63
3.4.1	Giant Garter Snake (<i>Thamnophis gigas</i>)	3-63
3.4.2	Western Pond Turtle (<i>Clemmys marmorata</i>).....	3-67
Chapter 4 - Species Assessment Methods and Impact Analyses		4-1
4.1	Introduction.....	4-1
4.1.1	Analysis of Potential Hydrologic Effects on Special-Status Fish Species Within the Upstream From the Delta Region.....	4-4
4.1.1	Analysis of Potential Hydrologic Effects on Special-Status Fish Species within the Delta Region.....	4-7
4.1.2	Analysis of Potential Hydrologic Effects on Special-Status Fish Species within the Export Service Area.....	4-29
4.1.3	Analysis of Potential Effects on Terrestrial Species.....	4-30
4.2	Central Valley Fall-run/Late-fall-run Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	4-30
4.2.1	Status in the Action Area.....	4-30
4.2.2	Effect Assessment Methods	4-31
4.2.3	Project Effects.....	4-34
4.2.4	Conservation Measures	4-38
4.2.5	Contribution to Recovery	4-39
4.3	Sacramento River Winter-run Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	4-40
4.3.1	Status in the Action Area.....	4-40
4.3.2	Effect Assessment Methods	4-40
4.3.3	Project Effects.....	4-41
4.3.4	Conservation Measures	4-43
4.3.5	Contribution to Recovery	4-44
4.4	Central Valley Spring-run Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	4-45
4.4.1	Status in the Action Area.....	4-45
4.4.2	Effect Assessment Methods	4-45
4.4.3	Project Effects.....	4-47
4.4.4	Conservation Measures	4-49
4.4.5	Contribution to Recovery	4-50
4.5	Central Valley Steelhead (<i>Oncorhynchus mykiss</i>)	4-51
4.5.1	Status in the Action Area.....	4-51
4.5.2	Effect Assessment Methods	4-51

Table of Contents

4.5.3	Project Effects.....	4-55
4.5.4	Conservation Measures and Expected Outcomes	4-57
4.5.5	Contribution to Recovery	4-58
4.6	Delta Smelt (<i>Hypomesus transpacificus</i>).....	4-59
4.6.1	Status in the Action Area	4-59
4.6.2	Effect Assessment Methods	4-59
4.6.3	Project Effects.....	4-60
4.6.4	Conservation Measures.....	4-61
4.6.5	Contribution to Recovery	4-62
4.7	Sacramento Splittail (<i>Pogonichthys macrolepidotus</i>).....	4-62
4.7.1	Status in the Action Area	4-62
4.7.2	Effect Assessment Methods	4-63
4.7.3	Project Effects.....	4-64
4.7.4	Conservation Measures.....	4-66
4.7.5	Contribution to Recovery	4-66
4.8	Green Sturgeon (<i>Acipsenser medirostis</i>)	4-67
4.8.1	Status in the Action Area	4-67
4.8.2	Effect Assessment Methods	4-67
4.8.3	Project Effects.....	4-67
4.8.4	Conservation Measures.....	4-68
4.8.5	Contribution to Recovery	4-68
4.9	Aleutian Canada Goose (<i>Branta canadensis leucopareia</i>)	4-68
4.9.1	Status in the Action Area	4-68
4.9.2	Effect Assessment Methods	4-69
4.9.3	Project Effects.....	4-69
4.9.4	Conservation Measures.....	4-76
4.9.5	Contribution to Recovery	4-76
4.10	Black Tern (<i>Chlidonias niger</i>).....	4-76
4.10.1	Status in the Action Area	4-76
4.10.2	Effect Assessment Methods	4-77
4.10.3	Project Effects.....	4-77
4.10.4	Conservation Measures.....	4-77
4.10.5	Contribution to Recovery	4-78
4.11	Black-crowned Night Heron (<i>Nycticorax nycticorax</i>).....	4-78
4.11.1	Status in the Action Area	4-78
4.11.2	Effect Assessment Methods	4-78
4.11.3	Project Effects.....	4-78
4.11.4	Conservation Measures.....	4-79
4.11.5	Contribution to Recovery	4-79
4.12	Great Blue Heron (<i>Ardea herodias</i>)	4-79
4.12.1	Status in the Action Area	4-79
4.12.2	Effect Assessment Methods	4-80
4.12.3	Project Effects.....	4-80
4.12.4	Conservation Measures.....	4-81

4.12.5	Contribution to Recovery	4-81
4.13	Great Egret (<i>Casmerodius alba</i>)	4-81
4.13.1	Status in the Action Area.....	4-81
4.13.2	Effect Assessment Methods	4-81
4.13.3	Project Effects	4-81
4.13.4	Conservation Measures	4-82
4.13.5	Contribution to Recovery	4-82
4.14	Greater Sandhill Crane (<i>Grus canadensis tabida</i>).....	4-82
4.14.1	Status in the Action Area.....	4-82
4.14.2	Effect Assessment Methods	4-83
4.14.3	Project Effects	4-83
4.14.4	Conservation Measures	4-84
4.14.5	Contribution to Recovery	4-84
4.15	Long-billed Curlew (<i>Numenius americanus</i>).....	4-84
4.15.1	Status in the Action Area.....	4-84
4.15.2	Effect Assessment Methods	4-85
4.15.3	Project Effects	4-85
4.15.4	Conservation Measures	4-85
4.15.5	Contribution to Recovery	4-85
4.16	Snowy Egret (<i>Egretta Thula</i>).....	4-86
4.16.1	Status in the Action Area.....	4-86
4.16.2	Effect Assessment Methods	4-86
4.16.3	Project Effects	4-86
4.16.4	Conservation Measures	4-87
4.16.5	Contribution to Recovery	4-87
4.17	Tricolored Blackbird (<i>Agelaius tricolor</i>)	4-87
4.17.1	Status in the Action Area.....	4-87
4.17.2	Effect Assessment Methods	4-88
4.17.3	Project Effects	4-88
4.17.4	Conservation Measures	4-89
4.17.5	Contribution to Recovery	4-89
4.18	White-faced Ibis (<i>Plegadis chihi</i>).....	4-90
4.18.1	Status in the Action Area.....	4-90
4.18.2	Effect Assessment Methods	4-90
4.18.3	Project Effects	4-90
4.18.4	Conservation Measures	4-91
4.18.5	Contribution to Recovery	4-91
4.19	Giant Garter Snake (<i>Thamnophis gigas</i>).....	4-91
4.19.1	Status in the Action Area.....	4-91
4.19.2	Effect Assessment Methods	4-92
4.19.3	Project Effects	4-92
4.19.4	Conservation Measures	4-94
4.19.5	Contribution to Recovery	4-95
4.19.6	Conservation Strategy for the Giant Garter Snake	4-98

4.20 Western Pond Turtle (<i>Clemmys marmorata</i>).....	4-99
4.20.1 Status in the Action Area	4-99
4.20.2 Effect Assessment Methods.....	4-100
4.20.3 Project Effects.....	4-100
4.20.4 Conservation Measures.....	4-101
4.20.5 Contribution to Recovery	4-101
Chapter 5 - Environmental Basis of Comparison - NCCP Community Descriptions...5-1	
5.1 Introduction to NCCP Community Descriptions	5-1
5.2 Tidal Perennial Aquatic	5-4
5.3 Valley Riverine Aquatic.....	5-4
5.4 Montane Riverine Aquatic	5-6
5.5 Lacustrine	5-7
5.6 Saline Emergent	5-8
5.7 Tidal Freshwater Emergent.....	5-10
5.8 Nontidal Freshwater Permanent Emergent.....	5-11
5.9 Natural Seasonal Wetland.....	5-13
5.10 Managed Seasonal Wetland.....	5-14
5.11 Valley/Foothill Riparian	5-15
5.12 Montane Riparian.....	5-16
5.13 Upland Cropland.....	5-17
5.14 Seasonally Flooded Agricultural Lands	5-19
5.15 NCCP Fish Groups	5-20
5.15.1 Anadromous Fish Group.....	5-22
5.15.2 Estuarine Fish Group	5-23
Chapter 6 - Effects of the Proposed Action on NCCP Communities inside the	
Area of Analysis	6-1
6.1 Introduction	6-1
6.2 Determining the Likelihood that EWA Actions would Affect NCCP Habitats.....	6-1
6.3 Tidal Perennial Aquatic	6-2
6.3.1 Status in the Action Area	6-2
6.3.2 Effect Assessment Methods.....	6-2
6.3.3 Project Effects	6-3
6.3.4 Conservation Measures	6-3
6.3.5 Contribution to Recovery	6-4
6.4 Valley Riverine Aquatic.....	6-4
6.4.1 Status in the Action Area.....	6-4
6.4.2 Effect Assessment Methods.....	6-4
6.4.3 Project Effects	6-4
6.4.4 Conservation Measures	6-7
6.4.5 Contribution to Recovery	6-8
6.5 Montane Riverine Aquatic	6-8

6.5.1	Status in the Action Area	6-8
6.5.2	Effect Assessment Methods	6-8
6.5.3	Project Effects.....	6-8
6.5.4	Conservation Measures.....	6-10
6.5.5	Contribution to Recovery.....	6-11
6.6	Lacustrine	6-11
6.6.1	Status in the Action Area	6-11
6.6.2	Effect Assessment Methods	6-12
6.6.3	Project Effects.....	6-13
6.6.4	Conservation Measures.....	6-18
6.6.5	Contribution to Recovery.....	6-18
6.7	Saline Emergent.....	6-19
6.7.1	Status in the Action Area	6-19
6.7.2	Effect Assessment Methods	6-19
6.7.3	Project Effects.....	6-20
6.7.4	Conservation Measures.....	6-21
6.7.5	Contribution to Recovery.....	6-21
6.8	Tidal Freshwater Emergent.....	6-21
6.8.1	Status in the Action Area	6-21
6.8.2	Effect Assessment Methods	6-21
6.8.3	Project Effects.....	6-22
6.8.4	Conservation Measures.....	6-23
6.8.5	Contribution to Recovery.....	6-23
6.9	Nontidal Freshwater Permanent Emergent.....	6-23
6.9.1	Status in the Action Area	6-23
6.9.2	Effect Assessment Methods	6-24
6.9.3	Project Effects.....	6-24
6.9.4	Conservation Measures.....	6-24
6.9.5	Contribution to Recovery.....	6-24
6.10	Natural Seasonal Wetland.....	6-24
6.10.1	Status in the Action Area	6-25
6.10.2	Effect Assessment Methods	6-25
6.10.3	Project Effects.....	6-25
6.10.4	Conservation Measures.....	6-26
6.10.5	Contribution to Recovery.....	6-26
6.11	Managed Seasonal Wetland.....	6-26
6.11.1	Status in the Action Area	6-26
6.11.2	Effect Assessment Methods	6-27
6.11.3	Project Effects.....	6-27
6.11.4	Conservation Measures.....	6-29
6.11.5	Contribution to Recovery.....	6-29
6.12	Valley/Foothill Riparian	6-29
6.12.1	Status in the Action Area	6-29
6.12.2	Effect Assessment Methods	6-30

6.12.3	Project Effects	6-30
6.12.4	Conservation Measures	6-30
6.12.5	Contribution to Recovery	6-30
6.13	Montane Riparian	6-30
6.13.1	Status in the Action Area	6-30
6.13.2	Effect Assessment Methods.....	6-30
6.13.3	Project Effects	6-31
6.13.4	Conservation Measures	6-31
6.13.5	Contribution to Recovery	6-31
6.14	Upland Cropland	6-31
6.14.1	Status in the Action Area	6-31
6.14.2	Effect Assessment Methods.....	6-31
6.14.3	Project Effects	6-32
6.14.4	Conservation Measures	6-32
6.14.5	Contribution to Recovery	6-32
6.15	Seasonally Flooded Agricultural Land	6-32
6.15.1	Status in the Action Area	6-32
6.15.2	Effect Assessment Methods.....	6-33
6.15.3	Project Effects	6-34
6.15.4	Conservation Measures	6-36
6.15.5	Contribution to Recovery	6-36
6.16	Anadromous Fish Species Community	6-36
6.17	Estuarine Fish Species Community	6-36
Chapter 7	- Monitoring, Adaptive Management, and other Disclosures	7-1
7.1	Monitoring Program	7-1
7.1.1	Responsibilities	7-1
7.1.2	Monitoring Plan Development	7-2
7.1.3	Monitoring Plan Implementation.....	7-2
7.1.4	EWA Monitoring Program Review	7-2
7.2	Adaptive Management	7-3
7.3	Funding	7-4
7.4	Assurances to Landowners	7-4
7.5	Assessment of Cumulative Effects	7-4
7.6	Other Alternatives Evaluated	7-4
8	Changed Circumstances	8-1
9	Effects Determination Conclusion.....	9-1
9.1	Species	9-1
9.1.1	Summary of Effects.....	9-1
9.2	NCCP Communities.....	9-11
10	References	10-1

Appendices

- Appendix A* – Species and NCCP Communities Considered, but not Evaluated in the EWA ASIP
- Appendix B* – Modeling Description
- Appendix C* – Fish Decision Trees

List of Tables

1-1	Species Addressed in the EWA ASIP	1-16
2-1	VAMP Export Limitations	2-5
2-2	Pump Reductions Under the Existing Baseline Level of Fisheries Protection	2-8
2-3	Export/Inflow Ratio	2-13
2-4	Anadromous Fish Life History Stages and Locations.....	2-19
2-5	Potential Asset Acquisitions and Management for the Proposed Action (Upper Limits).....	2-22
2-6	Acquired Variable Assets.....	2-35
2-7	Estimated EWA Acquisition Patterns Keyed to SWP Allocations Cross Delta Capacity, and Acquisition Priorities	2-45
4-1	Long-term Average Delta Outflow Under Basis of Comparison and Proposed Action (Maximum Water Purchase Scenario) Conditions.....	4-13
4-2	Long-term Average Delta X ₂ Position Under Basis of Comparison and Proposed Action (Maximum Water Purchase Scenario) Conditions.....	4-14
4-3	Long-term Average Delta E/I Ratio Under Basis of Comparison and Proposed Action (Maximum Water Purchase Scenario) Conditions.....	4-15
4-4	Frequency of Reverse Flows (QWEST) Over Varying Flow Ranges.....	4-17
4-5	Change in Delta Smelt Salvage at the SWP and CVP Pumps Under the Maximum Water Purchase Scenario – Proposed Action vs. Basis of Comparison.....	4-18
4-6	Change in Chinook Salmon Salvage at the SWP and CVP Pumps Under the Maximum Water Purchase Scenario – Proposed Action vs. Basis of Comparison.....	4-19
4-7	Change in Steelhead Salvage at the SWP and CVP Pumps Under the Maximum Water Purchase Scenario – Proposed Action vs. Basis of Comparison	4-20
4-8	Change in Splittail Salvage at the SWP and CVP Pumps Under the Maximum Water Purchase Scenario – Proposed Action vs. Basis of Comparison	4-21
4-9	Long-term Average Delta Outflow Under Basis of Comparison and Proposed Action (Typical Water Purchase Scenario) Conditions	4-22
4-10	Long-term Average Delta X ₂ Position Under Basis of Comparison and Proposed Action (Typical Water Purchase Scenario) Conditions	4-22
4-11	Long-term Delta Average E/I Ratio under Basis of Comparison and Proposed Action (Typical Water Purchase Scenario) Conditions	4-23
4-12	Frequency of Reverse Flows (QWEST) Over Varying Flow Ranges.....	4-24

Table of Contents

4-13	Change in Delta Smelt Salvage at the SWP and CVP Under the Typical Water Purchase Scenario – Proposed Action vs. Basis of Comparison....	4-26
4-14	Change in Chinook Salmon Salvage at the SWP and CVP Pumps under Basis of Comparison (Typical Water Purchase Scenario) Condition.....	4-26
4-15	Change in Steelhead Salvage at the SWP and CVP Pumps Under Typical Water Purchase Scenario – Proposed Action vs. Basis of Comparison....	4-28
4-16	Change in Splittail Salvage at the SWP and CVP Pumps Under Typical Water Purchase Scenario – Proposed Action vs. Basis of Comparison....	4-29
4-17	Effect Indicators and Evaluation Criteria for Fall-run/Late-fall run Chinook Salmon.....	4-31
4-18	Effect Indicators and Evaluation Criteria for Sacramento River Winter-run Chinook Salmon.....	4-40
4-19	Effect Indicators and Evaluation Criteria for Central Valley Spring-run Chinook Salmon.....	4-45
4-20	Effect Indicators and Evaluation Criteria for Central Valley Steelhead...	4-51
4-21	Effect Indicators and Evaluation Criteria for Delta Smelt.....	4-59
4-22	Effect Indicators and Evaluation Criteria for Sacramento Splittail.....	4-63
4-23	Relationship of Covered Species Associated to Rice Land Crop Cycles..	4-71
5-1	Crosswalk of MSCS NCCP Habitat Types to Other Community and Habitat Classification Systems.....	5-2
5-2	Covered Species Associated with Rice Fields.....	5-21
6-1	Effect Indicators and Evaluation Criteria for Tidal Perennial Aquatic Community.....	6-3
6-2	Effect Indicators and Evaluation Criteria for Saline Emergent Community.....	6-20
6-3	Effect Indicators and Evaluation Criteria for Tidal Freshwater Emergent Community.....	6-22
6-4	Seasonally Flooded Agriculture Acreage and Waste Grain Reductions in Each County Based on Crop Idling Maximum Under the Proposed Action	6-35
9-1	Direct and Indirect Effects Analysis of Special-Status Species within the Action Area.....	9-10

List of Figures

2-1	Relationships of CALFED Programmatic and EWA Compliance with NEPA/CEQA and ESA/NCCPA.....	1-5
2-1	EWA Action Area	2-2
2-2	Location of Delta Export Pumps.....	2-7
2-3	Location of Delta Cross Channel	2-9
2-4	Asset Acquisition and Management Areas.....	2-21
2-5	Potential Asset Acquisition and Management Participants	2-23
2-6	Reservoir Level Changes due to Stored Reservoir Water Purchases	2-25
2-7	Feather River Water Facilities	2-26

2-8	Yuba River Water Facilities.....	2-27
2-9	American River Water Facilities.....	2-28
2-10	Reservoir Level Changes Due to Groundwater Substitution Transfers...	2-29
2-11	Diversion Locations for Feather River Sellers.....	2-31
2-12	Merced River Water Facilities.....	2-32
2-13	Diversion Locations for SGA Participants.....	2-34
2-14	Reservoir Level Changes Due to Borrowing Water from San Luis Reservoir.....	2-41
2-15	Reservoir Level Changes Due to Source Shifting.....	2-43
3-1	Distribution of Aleutian Canada Geese Wintering.....	3-70
3-2	Distribution of Black Tern.....	3-71
3-3	Distribution of Black Tern.....	3-72
3-4	Distribution of Black-Crowned Night Heron Rookery.....	3-73
3-5	Distribution of Great Blue Heron Rookery.....	3-74
3-6	Distribution of Great Egret Rookery.....	3-75
3-7	Distribution of Greater Sandhill Crane.....	3-76
3-8	Distribution of Greater Sandhill Crane.....	3-77
3-9	Distribution of Long-billed Curlew.....	3-78
3-10	Distribution of Snowy Egret.....	3-79
3-11	Distribution of Tri-colored Blackbird Nesting Colonies.....	3-80
3-12	Distribution of White-faced Ibis Nesting.....	3-81
3-13	Distribution of Giant Garter Snake.....	3-82
3-14	Distribution of Western Pond Turtle.....	3-83
4-1	Breeding Bird Survey Results 1980 to 2001.....	4-70

Acronyms

AF	acre-feet
AFRP	Anadromous Fish Recovery Plan
ASIP	Action Specific Implementation Plan
BA	Biological Assessment
BMPs	Best Management Practices
BO	Biological Opinion
BRD	Biological Resource Division
CALFED	CALFED Bay-Delta Program
CCAs	Candidate Conservation Agreements
CDFG	California Department of Fish and Game
CDWR	California Department of Water Resources
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CMARP	Comprehensive Monitoring, Assessment, and Research Program (defunct)
CNPS	California Native Plant Society
CRR	Cohort Replacement Rate
CSC	California species of special concern
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationship
DCC	Delta Cross Channel
DFG	California Department of Fish and Game
EFH	essential fish habitat
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
ERP	Ecosystem Restoration Program
ESA	Endangered Species Act
ESUs	Evolutionarily Significant Units
EWA	Environmental Water Account
EWP	Environmental Water Program
FERC	Federal Energy Regulatory Commission
FESA	Federal Endangered Species Act
FWS	US Fish and Wildlife Service
Gap GIS	California Gap Analysis land-cover GIS database
GIS	Geographic Information System
ha	Hectare
HCP	Habitat Conservation Plan
IA	Implementing Agreement
IEP	Interagency Ecological Program
ISDP	Interim South Delta Program

ISI..... Integrated Storage Investigation
 Metropolitan WDMetropolitan (Los Angeles) Water District
 MSCS.....Multi-Species Conservation Strategy
 NEPA..... National Environmental Policy Act
 NMFSNational Marine Fisheries Service
 NCCP Natural Community Conservation Plan
 NCCPA Natural Community Conservation Planning Act
 NOAA National Oceanic and Atmospheric Agency
 NOD Notice of Determination
 PFMC..... Pacific Coast Salmon Plan
 PG&E..... Pacific Gas & Electric Company
 Reclamation.....U.S. Bureau of Reclamation
 RBDD..... Red Bluff Diversion Dam
 rm..... river mile
 RODRecord of Decision
 SBSenate Bill
 SJRA.....San Joaquin River Agreement
 SRAShaded Riverine Aquatic
 SWPState Water Project
 SWRCB.....State Water Resources Control Board
 TOCTotal Organic Carbon
 USACEU.S. Army Corps of Engineers
 USBRU.S. Bureau of Reclamation
 USEPA.....U.S. Environmental Protection Agency
 USFWSU.S. Fish and Wildlife Service
 VAMP.....Vernalis Adaptive Management Plan
 VSPViable Salmonid Populations
 Wetlands GIS..... California Central Valley Wetlands and Riparian GIS
 WMS Water Management Strategy
 WQCP Water Quality Control Plan
 YCWA Yuba County Water Agency
 YCTWG..... Yuba County Technical Working Group